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EDWARD KREMERS.

Edward Kremers has been a member of the AMERICAN PHARMACEUTICAL ASSOCIATION for fifty years. He was Director of the Course in Pharmacy at the University of Wisconsin from 1892 to 1935 when he retired from adminstrative duties. He has not, however, discontinued his work in research and his interest in pharmaceutical activities, but has extended them by accepting an appointment on the Wisconsin State Board of Pharmacy.

Dr. Kremers was born in Milwaukee, Wisconsin, on Feburary 23, 1865. He attended the Philadelphia College of Pharmacy in 1894 and returned to Wisconsin to graduate from the University with the class of 1886. He then went abroad to study under Wallach and took his degree of Doctor of Philosophy at Göttingen in 1890. He had started his inspired career under the direction of F. B. Power at Wisconsin and has continued through an active half a century until he is known internationally as the author of many papers on his research in pharmaceutical chemistry as well as on historical aspects of his profession. Listing the titles of his contributions and pharmaceutical positions of importance would extend this sketch[1] beyond reasonable limits.

The AMERICAN PHARMACEUTICAL ASSOCIATION twice honored Dr. Kremers by nominating him to the presidency and twice he asked that his name be withdrawn. The nature of this retiring man is such that he cannot accept such a position. His is a quiet life of faithful service which has brought fame and honor to him and everlasting respect, gratitude and friendship from his many students and others.

Many members of the AMERICAN PHARMACEUTICAL ASSOCIATION have had the pleasure of meeting Dr. Kremers at his delightful home at "Highlands."

[1] Among previous sketches of his life, we mention but two. One was written on the occasion of his Honorary Presidency of the AMERICAN PHARMACEUTICAL ASSOCIATION and appears in Vol. 22, page 807 (1933), of the JOURNAL and the other, written by Oswald Schreiner, one of his former students, is found in *Ind. Eng. Chem.*, Vol. 24, page 115 (1932).—R. W. C.

Those who know him best, like him best in these surroundings which fit the personality of this wise and helpful counselor of many a friend and student. It is there, too, that Mrs. Kremers, his loyal wife, has become no less beloved than her famous husband.

We sincerely hope that this lover of nature and good music, this servant of pharmacy, may enjoy many years of good health with time to write still more from the storehouse of knowledge he has accumulated.—R. W. C.

THE PHARMACY WEEK PRIZE WINDOW (ROBERT J. RUTH MEMORIAL) AWARDED TO MORGAN AND MILLARD, INC., BALTIMORE, MD.

LIFE IN THE BALANCE.

Morgan & Millard of Baltimore have won the Grand Prize (Robert J. Ruth Memorial) for their Pharmacy Week Window Display.

Liberty is taken in using the part of the Committee's report having reference to this award for the legend.

"The opinion of the judges, after careful consideration, was that the exhibit shown above fulfilled to a greater degree the factors which were originally outlined in the rules for this contest, namely, 'Interpretative thought, human-interest appeal, etc.'

"In the exhibit, the prescription is vividly and prominently displayed as the fulcrum, and most important part of the balance in which the life of the patient, the success of the physician and the professional services of the pharmacist are carefully weighed.

"In addition, the exhibit of 'The Evolution of Materials Used in Medicine' merits special mention because of the interesting and chronological manner in which it was displayed."

PHARMACY OF THE FUTURE.

At the 25th anniversary celebration a gift was provided for a $3000.00 fund. This is for a model "Pharmacy of the Future," and donated by the Pharmacy Alumni Association, Fordham University.

Dr. Otto F. A. Cains was presented the Gold Convocation Medal in recognition of his twenty years of service. He was the first student to register in Fordham College of Pharmacy, in 1912.

EDITORIAL

E. G. EBERLE, EDITOR 2215 Constitution Ave., WASHINGTON, D. C.

PURE FOOD AND DRUG LEGISLATION.

RESOLUTIONS, under Pure Food and Drug Legislation on page 830 of the September JOURNAL, prompt enactment of legislation is urged in the matter of foods, drugs and cosmetics, substantially the same as Senate Bill No. 5, as it was passed by the Senate in 1935. The ASSOCIATION opposed proposed legislation which will lessen enforcement efficiency and looked upon delay in the passage of legislation as disregard of public welfare. This comment quotes the report of the Committee on Commerce, "to whom was referred the bill (S. 5) to prevent the adulteration, misbranding and false advertisement of foods, drugs, devices and cosmetics, in interstate, foreign and other commerce subject to the jurisdiction of the United States, for the purposes of safeguarding the public health, preventing deceit upon the purchasing public and for other purposes, having considered the same, report thereon with certain amendments, and as so amended, recommend that the bill do pass." The amendments are incorporated in the bill as reported.

The report states "that this bill has been prepared with three basic principles in mind: *First*, it must not weaken the existing laws; *second*, it must strengthen and extend that law's protection of the consumer; and, *third*, it must impose on honest industrial enterprise no hardship which is unnecessary or unjustified in the public interest. It has been prepared after many and extensive conferences with the enforcement agencies of the Government and with representatives of various consumer groups or associations, professional groups and the industries to be regulated."

"Separately called meetings were held with representatives of the food, drug and cosmetic industries. Letters inviting suggestions were sent to many persons known to be interested in the subject. Several volumes of suggestions have been received from persons in the groups just mentioned. These suggestions have been carefully studied; many of them rejected; some accepted; some accepted in part or in effect. The hearings which have been held by committees of the Senate and House of Representatives on previous bills in former sessions of the Congress have been reviewed and studied to take advantage of the information and discussions contained in them."

The Committee holds, "considering the variety and diversity of interest, the unavoidable controversies that honestly arise among these interests, a so-called 'perfect' bill hardly can be formulated. This bill is not a thing of perfection. It simply represents an earnest effort to serve its declared purposes. It is introduced in the hope that all who desire to see its purposes accomplished and all who are friends of the movement for a better law, will give it unbiased, impartial and careful consideration, and, after so doing, will see their way clear to support and advocate its enactment."

"The sequence in the bill has been changed from that of previous bills, with a view to making it simpler to read, both while it is a bill and later as a law, when it will be constantly examined by enforcement officials, courts and lawyers. It was thought that it would be an advantage to have the prohibited acts and the enforcement machinery put in the forepart of the bill so that one may quickly learn those requirements, and then move deeper into the bill for details on the particular problem in which he is interested."

"The requirement that claims for drug products should be supported by medical opinion was deleted; great difficulty always has been found in defining 'medical opinion.' As shown, in the previous discussions, it would often be impossible to determine what the state of medical opinion is on controverted subjects. The only other change of consequence in the seizure provision is that when seizures have been made the trial may be held in a district of reasonable proximinity to the claimant's place of business. Nothing is claimed for this provision except that it is fair. Goods must be seized wherever found. But, there is no reason why a claimant for the goods, who perhaps may reside across the continent, should be compelled to cross the country to try the case."

The Committee includes a summary of the principal respects in which this bill increases the scope of the old law and affords the public greater protection, part of this is quoted: "The bill prohibits false advertising of foods, drugs, therapeutic devices and cosmetics. For the first time cosmetics are placed under Federal supervision, requiring cosmetics to be truthfully sold and outlaws those injurious to health. It prohibits traffic in drugs and devices which are dangerous to health under the conditions of use prescribed in the labeling or advertising; habit-forming drugs must bear warning labels. The bill requires adequate directions for use of drugs and devices and appropriate warnings against their probable misuse through overdosage, or by children, or in disease conditions where they may be dangerous, and sets up special protection to consumers against drugs liable to deterioration. It requires that claims of effect of drugs and devices must not be false or misleading in any material particular. (The present law makes fraud, that is, wilful intent to deceive, an element of the offense; unwarranted therapeutic claims resulting from sheer ignorance of the manufacturer are not actionable.) This bill defines 'non-official' drugs as illegal if the standard of strength varies from the standard claimed. (The present law prescribes only those which fall below the standard claimed. Drugs which are too strong may be quite dangerous.) Under the proposed definition antiseptics must possess germicidal power."

As stated, this comment is prepared from the report of the Committee; in part, condensed. It is hoped that agreement on early enactment of Pure Food and Drug legislation will be completed.

FALSE ADVERTISING.

THE U. S. Department of Agriculture Press Service of January 26th, reports a number of cases in court, exposing the misstatements of certain manufacturers relative to preparations for which they had created demand. The purpose of this comment is not to take up these cases, but to show the danger and point out that the practice of false advertising destroys confidence, may destroy health and life, and injures the industry. Federal Judge Chestnut at Baltimore analyzed the statements made by a manufacturer of preparations that were represented falsely as a treatment for pleurisy congestion and pneumonia. The Judge stressed that the manufacturer "who is in a gainful pursuit with regard to selling drugs certainly ought to know whether the thing he is selling to the public is sold under fair representations or false representations." He advised that "something more is required of a man who undertakes to make a profit in selling drugs to the public than merely a willingness to change when he is caught or found out." Cases in other sections of

the country are reported by the *Press Service*, but only in the foregoing case is the reprimand of the Court reported. A purpose of this comment is to direct attention to the dangers of false advertising and promoting the use of preparations that endanger health and life.

There are malpractices in other divisions of industry; the Pennsylvania Pharmaceutical Association directs to a practice which is reported in this issue of the JOURNAL (page 101). Unfortunately, no business, practice, or activity is free from selfish promotions and while we deplore violations which are reprehensible, we may be encouraged by the fact that efforts are constantly being made to improve conditions. Dangers are not only in merchandising but in unethical practices.

We quote from the *Standard Remedies*—the business magazine for the proprietary drug specialty industry:

"In the final analysis, public opinion rules. Let the proprietary manufacturer bear this in mind. A better understanding of the public conception of the aims of the legitimate proprietary manufacturer will certainly aid the cause of our industry. The temper of advertising claims will go a long way toward correcting existing consumer misconception of the basis of the modern proprietary. The public judges the manufacturer by his advertising, and the reputation of the entire industry is considered in the light of public utterances of the members of that industry."

PHARMACY COLLEGE DEANS AT FORDHAM'S SILVER JUBILEE DINNER.

Deans of five colleges of pharmacy in and around New York attended the Silver Jubilee Dinner of the Fordham University College of Pharmacy at the Hotel Pennsylvania, Tuesday evening, February 9th.

Left to right: Dr. H. V. Arny, Dean of the Columbia University College of Pharmacy; Dr. John L. Dandreau, Dean of St. John's University College of Pharmacy; Dr. William C. Anderson of the Brooklyn College of Pharmacy; Dr. Ernest Little, of Rutgers University College of Pharmacy and Dr. James H. Kidder, Dean of Fordham University College of Pharmacy.

SCIENTIFIC SECTION

BOARD OF REVIEW OF PAPERS.—*Chairman*, F. E. Bibbins; H. M. Burlage, W. G. Crockett, E. V. Lynn, C. O. Lee, L. W. Rising, L. W. Rowe, Heber W. Youngken, F. V. Lofgren, J. C. Krantz, Jr.

THE COMPARATIVE PHARMACOGNOSY OF THE ANTERIOR AND POSTERIOR LOBES OF THE PITUITARY OF CATTLE.*

BY HEBER W. YOUNGKEN.[1]

The Pituitary body or *Hypophysis cerebri* is a small, somewhat ovoid endocrine gland found within the skull of vertebrates firmly lodged in a depression known as the sella tursica of the sphenoid bone. It is encased by a fibrous capsule of connective tissue representing chiefly dura mater which lines the cranium. It consists of a large anterior lobe, a small posterior lobe and a *pars intermedia*. The anterior lobe is epithelial in origin and represents an offshoot from the primitive buccal cavity of the embryo. It is hollowed out behind so as to form a cavity for the lodgment of the posterior lobe. The *pars intermedia* is fused with the posterior lobe and lies behind the hypophyseal cleft which separates the two lobes. It is more pronounced in cattle, sheep and hogs than in man. It is epithelial in origin being derived from the posterior wall of Rathke's pouch.

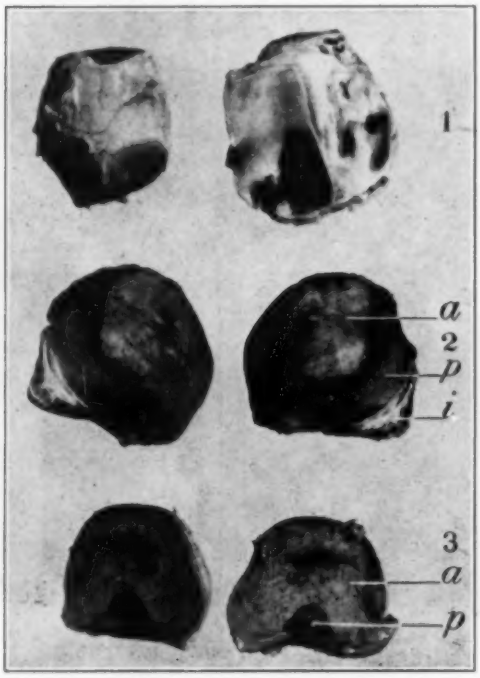

Fig. 1.—Pituitary glands of cattle (*Bos taurus*). 1. To left, convex surface; to right, concave, infundibular surface and lateral surface of gland. 2. Lateral views of gland. 3. Gland halved to show internal structure. *a*, anterior lobe; *p*, posterior lobe; *i*, infundibulum.

The purpose of this paper is to render a report on the pharmacognostical and histological differences as found by the writer between the anterior and the posterior lobes of the pituitary of cattle and their powdered, desiccated glands.

In a previous paper (1) the writer published the results of his early studies made upon the powdered, desiccated whole pituitary, anterior pituitary and posterior pituitary. These studies have been continued with the aim of finding methods which would simplify the problem of distinguishing these powdered endocrine products.

The materials studied consisted of preserved and desiccated whole pitui-

* Scientific Section, A. PH. A. Dallas meeting, 1936.

[1] Massachusetts College of Pharmacy, June 1, 1936.

taries, preserved and desiccated anterior and posterior lobes and powdered, desiccated, anterior and posterior lobes.

Celloidin and paraffin sections of the whole pituitary of cattle and of both of its lobes were cut in vertical and horizontal planes and variously stained, mounted and examined under low and high power magnifications under the compound microscope. The desiccated gland and its separate lobes were macerated in warm water, dissected under a dissecting binocular microscope and representative portions transferred to microslides, teased apart with dissecting needles and examined separately in water and various stains. The powdered, desiccated materials were mounted directly in water and in various stains and also fixed to slides with diluted Mayer's albumin fixative (1:20), allowed to dry over night and subsequently stained in staining wells, washed, dehydrated, cleared in xylol and mounted in balsam. The filter and funnel method was also used, especially for a modification of the Penfield-Hortega silver carbonate method of preparation and proved satisfactory. The chief objection to this method is the occurrence of vegetable fibers from the filter paper in some of the stained powder but these and other débris can readily be distinguished from the natural elements of the pituitary by a skilled microscopist.

The stained sections and fragments of the gland were compared under the compound microscope with similarly stained and mounted powders representing powdered, desiccated anterior and posterior lobes of the pituitary of cattle, and the elements found in the powdered products thus identified.

The stains used included the following: Weigert's hematoxylin with and without copper acetate solution as a mordant, Delafield's hematoxylin, alcoholic eosin, aqueous eosin, Mallory's stain, a mixture of Mallory's stain with 1 per cent phosphotungstic acid, Mann's stain, aqueous solution of methylene blue and eosin (1 per cent of each), a 1 per cent solution of acid fuchsin with 0.1 cc. of dilute hydrochloric acid added to each 100 cc. of solution, 1 per cent osmic acid solution, gold chloride test solution, 3 per cent aqueous solution of silver nitrate. Penfield's modification of Del Rio-Hortega's silver carbonate method was employed in the examination of the pituicytes found only in the posterior lobe.

WHOLE BEEF PITUITARIES.

The beef pituitaries studied were preserved in part in Zenker's fluid and in part in alcohol and formalin. They were irregularly oval, from 2 to 2.3 cm. in length, 1.5 to 1.8 cm. in width and 1.3 to 1.5 cm. in vertical height and showed a circular to lens-shaped scar on one surface, marking the place of severance from the infundibulum. The whole gland excepting the scar was enveloped by a tough, fibrous capsule composed of meningeal tissues. About three-fourths the weight of the gland consists of anterior lobe.

HISTOLOGY.

Covering the entire gland is a capsule composed for the greater part of wavy fibers, and separating the two lobes from each other is a fibrous lamella of connective tissue. The fibers stain bluish with Delafield's hematoxylin and blue to greenish blue with a mixture of Mallory's connective tissue stain and 1 per cent phosphotungstic acid solution. Mann's stain imparted a purple color while copper-hematoxylin stained the fibers a pinkish purple. Sections of blood vessels occurred imbedded in the fibrous capsule.

Anterior Lobe.—The anterior lobe was found to be composed for the most part of polygonal epithelial cells of two types, chromophobe or chief cells and chromophile cells. These polygonal cells are arranged in solid branching cords and alveoli, each surrounded by a connective tissue capsule. The two types of epithelial cells can be excellently differentiated through the use of copper hematoxylin and eosin, using a differentiator containing potassium ferricyanide and borax. With this combination of stains the chromophobe cells show a clear, non-glandular, pink cytoplasm. The chromophile cells studied were of two types, *viz.:* (*a*) those containing eosinophilic or acidophilic granules and (*b*) those containing basophilic granules or, according to Bailey and

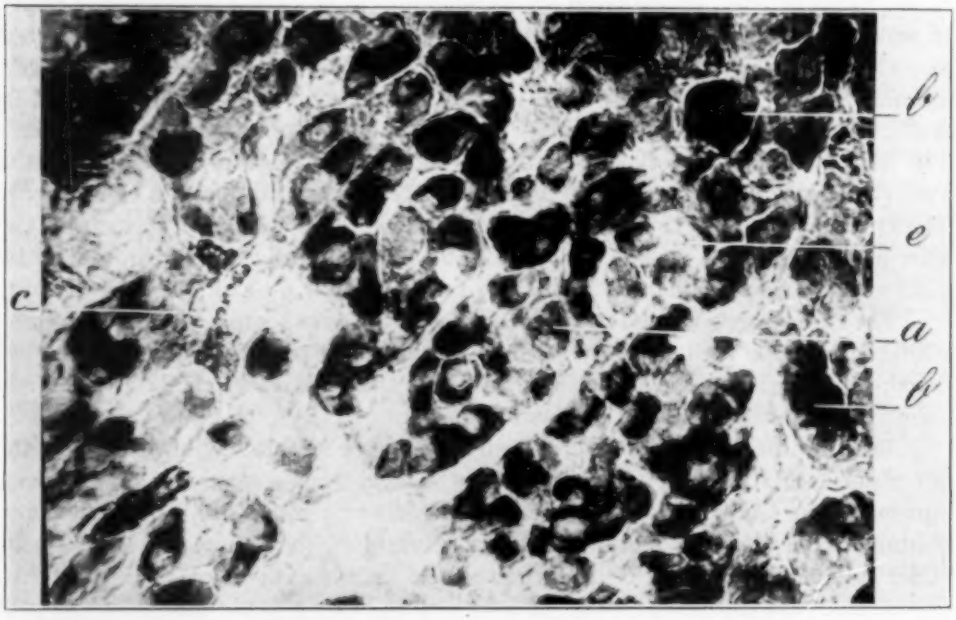

Fig. 2.—Sagittal section of the Anterior Pituitary of Beef, stained by the copper-hematoxylin method followed by treatment with Weigert's differentiator. *a*, Chromophile cells with alpha granules; *b*, chromophile cells with beta granules; *e*, chromophobe cells; *c*, capillary × 400.

Davidoff (2) chromophile cells containing alpha granules and chromophile cells containing beta granules. Both the alpha- and beta-granule containing cells are arranged without any definite order. The alpha-granule containing cells showed a blue-stained nucleus and a cytoplasm possessing distinct, small, rounded, blue-stained bodies while the beta-granule containing cells showed a similar nucleus with much finer, less distinct blue-stained granules which tend to form a homogeneous mass. Some lipoid granules colored brown to black with osmic acid solution also occurred in both chromophobe and chromophile cells.

The connective tissue around the alveoli was colored pink by this method and was seen to form a loose meshwork of collagenous fibers between the alveoli and cell cords, the strands being considerably detached in vertical sections. A number of brown-colored capillaries containing blood corpuscles some of which were colored red, others greenish black, were also observed between the alveoli and also thin, pink-colored nerve fibers. Here and there sinuses, containing a pink-stained colloidal substance, were noted. Many of these occurred in the center of alveoli. These colloidal areas may have been formed through the degeneration of the central cells of the original epithelial cords, as suggested by Bremer (3), or they may represent a secretion from the cord cells.

Sections of this lobe stained with Mallory's connective stain and 1 per cent solution of phosphotungstic acid showed the connective tissue to be colored blue to greenish blue and the cellular elements yellow to brown.

Posterior Lobe.—The so-called posterior lobe of the pituitary of cattle really consists of the *pars nervosa* with the adherent *pars intermedia*, the latter being attached to the front of the *pars nervosa* behind the hypophyseal cleft, and in some sections, seen to invade the *pars nervosa*.

Sections examined in Delafield's hematoxylin and eosin, copper-hematoxylin and eosin, Mann's stain, in acid fuchsin and Mallory's stain and in a mixture of Mallory's stain and 1 per cent phosphotungstic acid showed the greater portion of the *pars nervosa* to be composed of neuroglia with scattered bipolar and multipolar nerve cells, some containing pigment, and a number of non-medullated nerve fibers, some with bulbous ends. Scattered here and there occurred a few areas of colloid, a few sections of blood vessels and blood sinuses, some containing blood corpuscles.

Other sections impregnated by Penfield's modification of Del Rio-Hortega's silver carbonate method (4) showed numerous cells which P. C. Bucy has termed "pituicytes" and which possess one or more processes. Their nuclei and cytoplasm varied greatly in outline. Under oil-immersion magnification the cytoplasm in some of them was finely granular, in others the granules appeared en masse. The pituicytes varied also in the number of processes which sprang from their cell bodies. Some of them were unipolar cells, others bipolar, still others multipolar. Some of the processes were, as Bucy earlier reported in his material (5), considerably longer than processes of glial cells elsewhere observed and often divided in furcate fashion and gave rise to short branches. Some pituicytes were found with coarse granules in the cytoplasm, as also noted by Bucy. Of all the staining methods used by the writer, the Penfield modification of Hortega's silver carbonate method was found the best to distinguish the most diagnostic elements of the pituitary lobe of cattle, *i. e.*, the pituicytes. These were not found in the anterior lobe of the pituitary, nor have they been reported in any other part of the nervous system.

Fig. 3.—Pituicytes, dark objects, in a section of beef pituitary stained by the Penfield modification of the Hortega method. (From a Text Book of Pharmacognosy, 4th edition by the author, after Bucy in Penfield's "Cytology and Cellular Pathology of the Central Nervous System").—(*Courtesy of Paul B. Hoeber, Inc.*)

The *pars intermedia* which is attached to the front of the *pars nervosa* and separates with it in collecting the posterior lobe for the manufacture of pharmaceutical preparations differed from the *pars anterior* (anterior lobe) and the *pars nervosa* by showing epithelial cells arranged in incomplete alveoli. Moreover, when stained by copper-hematoxylin and eosin and differentiated with potassium ferricyanide and borax solution, these epithelial cells took the pink color, and none of the chromophile cells typical of the anterior lobe were present. However, a number of small scattered groups of small, round cells with blue-stained nucleus and cytoplasm and which may be regarded as basophiles were present. These also occur in the anterior lobe. The connective tissue between the partial alveoli was less pronounced than in the anterior lobe. With Mann's stain the connective tissue was colored blue in all parts of the gland, the colloid yellow to orange, the blood corpuscles pink to orange and the epithelial cells of the *anterior lobe* and *pars intermedia*, purple to pink.

DISTINCTIONS BETWEEN THE POWDERED, DESICCATED, ANTERIOR AND POSTERIOR PITUITARY.

The determination of the desiccated lobes afford a more difficult problem than that of distinguishing between stained sections of the parts of the pituitary. This is obviously due to the alteration of many elements in the process of preparing the products for the market, during which time a certain amount of shrinkage occurs in many cells, especially in the cytoplasm of neuroglia and glial cells including pituicytes. Nevertheless, it is not impossible for the experienced worker to quickly distinguish between the products by means of careful technique. The writer has found that a small funnel, flask and chemical filter paper are useful in some of the staining technique especially where two or more stains or solutions are employed, the powder being treated on the filter paper in position within the funnel with the staining solutions and, when dry, transferred to a slide for examination. It was often found necessary to dilute some of the stains used in order to bring out cell details in some of the elements. The personal element cannot be overlooked in this work. Usually there are a sufficient number of sufficiently thin elements present in the mounts so that the thicker, opaque masses can be passed by in making the examination, if deemed necessary. In addition to the histological characteristics previously reported by the writer for the powdered, desiccated, anterior and posterior pituitary products, the following observations may be added: Powdered, desiccated, anterior pituitary when treated with copper acetate solution as a mordant, and subsequently stained with Weigert's hematoxylin and eosin solution, and treated with Weigert's borax ferricyanide differentiator, shows polygonal to irregularly polygonal chromophile cells containing alpha and beta granules and polygonal to irregularly polygonal chromophobe cells containing clear, non-granular, pink cytoplasm, fragments of brown-stained connective tissue and nervous tissue, and occasional small circular basophiles with a blue nucleus and sky-blue cytoplasm.

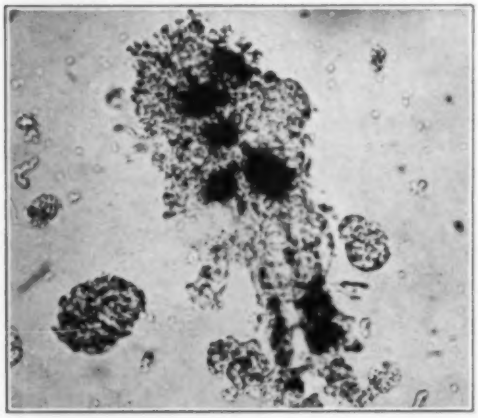

Fig. 4.—Fragments of the powdered, desiccated, pituitary, showing pituicytes as the larger black objects (× 400).

Powdered, desiccated, posterior pituitary by the aforementioned copper-hematoxylin and eosin method with Weigert's differentiator did not exhibit chromophile cells with alpha- and beta-granules, but showed mostly brownish pituicytes and pink-stained connective tissue together with a number of small rounded basophiles and a number of eosinophiles from the attached *pars intermedia*.

Pink-stained wavy connective tissue fibers, brownish capillaries and glial cells and processes occurred in the powders for both lobes.

The powders were next separately treated by a modification of Penfield's method consisting of the following procedure: They were first macerated in flasks

in 8 per cent formaldehyde, the material then repeatedly washed on a filter paper placed in a funnel with distilled water containing a few drops of stronger ammonia. The filter paper containing the powder was then immersed in 5 per cent solution of 40 per cent hydrobromic acid in distilled water at 38° C. for one hour, replaced in the funnel and washed 3 times with distilled water. The powder on the filter was then macerated in 5 per cent solution of sodium carbonate for 1 hour, the solution allowed to pass through the filter and the powder treated with Hortega's silver carbonate, weak solution (m-2) for 10 minutes. The powder was then treated with a 1 per cent solution of formalin and washed with distilled water. It was then immersed in a 1:500 solution of gold chloride at room temperature until of a bluish gray color, after which it was fixed in a 5 per cent solution of sodium hyposulfite, washed, dehydrated, cleared in xylol and mounted in balsam.

By this method the powdered, anterior lobe showed numerous microglia and oligodendroglia but no pituicytes nor bulbous ends of nerve fibers, whereas the powdered, posterior lobe showed pituicytes and non-medullated nerve fibers with bulbous ends. The non-medullated nerve fibers with bulbous ends are especially diagnostic for the posterior lobe and can also be detected with Delafield's hematoxylin and eosin and with hematoxylin and phosphotungstic acid combinations.

SUMMARY AND CONCLUSIONS.

1. A macroscopic description and illustrations are given for the whole pituitary gland of cattle (*Bos taurus* L.), the anterior lobe of which constitutes about three-fourths the weight of the entire gland.

2. The histological features of sections of beef pituitary are described and differences pointed out between the *anterior lobe*, *pars intermedia* and *pars nervosa*.

3. The *anterior lobe* was found to be composed for the most part of polygonal to irregularly polygonal epithelial cells arranged in solid, branching cords and alveoli, each of which was surrounded by a connective tissue sheath pervaded by capillaries and non-medullated nerve fibers and showing a number of microglia and oligodendroglia.

4. The epithelial cells of the *anterior lobe* are well differentiated through the use of a combination of copper-hematoxylin and eosin stains and Weigert's differentiator containing a mixture of potassium ferricyanide and borax. By this method chromophile cells with blue-colored alpha- and beta-granules can be distinguished sharply from pink-stained chromophobe cells.

5. No cells identical with the alpha- and beta-granule-containing chromophile cells of the anterior pituitary were found in sections of the posterior lobe.

6. Small, rounded basophiles occurred in little groups in the *anterior lobe*, *pars intermedia* and to a less extent in the *pars nervosa*, some sections of the last being entirely devoid of these. They possessed a deep blue nucleus and a lighter blue cytoplasm, when stained by the copper hematoxylin method.

7. The *pars intermedia* is attached to the front of the *pars nervosa* and tends to invade it in places. It differs from other regions of the pituitary by possessing incomplete alveoli of epithelial cells partially surrounded by connective tissue. Moreover, the alveolar cells are eosinophilic in character. It is totally devoid of alpha and beta chromophile cells.

8. The *posterior lobe* consists chiefly of pituicytes and ground substance.

The pituicytes are best demonstrated by the Penfield modification of the Hortega method and are chiefly of the multipolar and bipolar varieties.

9. Distinctions between the powdered, desiccated, anterior and posterior lobes of the pituitary of cattle are presented together with methods of preparing the powdered products for examination.

10. The most diagnostic elements of the powdered, desiccated, anterior lobe are the two kinds of chromophile cells with blue-stained alpha- and beta-granules as observed after treatment with copper hematoxylin and eosin and Weigert's differentiator.

11. The most diagnostic elements of the powdered, desiccated, posterior lobe are the pituicytes (formerly called mossy neuroglia), whose processes were found to be more shrunken and contracted in the powder than in the sections. The second most diagnostic element was found to be the segments of non-medullated nerve fibers with bulbous ends.

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(4) McClung, C. E., *et al.*, "Handbook of Microscopical Technique," 379–380 (1929).

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ANTHELMINTICS II. A COMPARISON OF CERTAIN OZONIDES, CHENOPODIUM OIL AND DIHEPTANOL PEROXIDE.*,[1]

BY LEWIS W. BUTZ AND W. A. LA LANDE, JR.[2]

The major component of oil of chenopodium is ascaridole and the anthelmintic action of the oil is due chiefly to this constituent. In a previous paper (1) it was shown that hydrogen peroxide and certain oxygenated terpenes are, like the terpene peroxide ascaridole (Fig. 1), highly toxic to swine ascarids *in vitro*. Since the peroxide function was demonstrable in these oxygenated mixtures, we were tempted to ascribe the anthelmintic effect of all these substances to the peroxide grouping —O—O—. In support of such a theory is the observation (2) that *Ascaris lumbricoides* lives practically anærobically in the intestine and it is, therefore, to be expected that substances capable of supplying a large quantity of active oxygen would seriously interfere with the life processes of the parasite. However, it was shown (1) that the antiascaridic activity of the oxygenated terpenes apparently survived the disappearance of the peroxide function, as indicated by a negative vanadium pentoxide-sulfuric acid

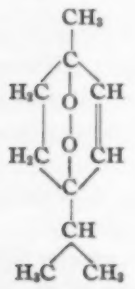

Fig. 1.—Ascaridole.

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* Scientific Section, A. PH. A., Dallas meeting, 1936.

[1] Presented in part before the Section on Medicinal Chemistry, American Chemical Society, New York City, April 1935.

[2] From the Laboratory of Dr. D. Jayne & Son, Inc., Philadelphia, Pa., and the Harrison Chemical Laboratory, University of Pennsylvania.

test. This result is, perhaps, to be attributed to the small sensitivity of this reagent in these terpene mixtures. The present paper, which reports results with ozonides and other peroxides, leaves no doubt that anthelmintic properties are common to many such compounds.

Swine ascarids have now been submitted to the action of a number of organic ozonides and peroxides *in vitro*. Several of these substances have also been administered to dogs harboring ascarids.[1] Organic ozonides are obtained by adding ozone to unsaturated compounds or products containing them, *e. g.*, certain vegetable oils. According to Rieche (3) ozonides are to be regarded as peroxide ethers with the structure $RR'C(-O-O-)CR'R$, where $R' = H$ or an organic radical. On hydrolysis ozonides yield hydrogen peroxide and aldehydes and/or ketones. Peroxides of the type RCHOH—O—O—CHOHR are sometimes intermediate in the hydrolytic degradation of ozonides in which $R' = H$ (4). Accepting Rieche's conception of the structure of the ozonide grouping, there is thus an interesting chemical relationship between ozonized oleates and diheptanol peroxide, $CH_3(CH_2)_5CHOH—O—O—CHOH(CH_2)_5CH_3$, one of the peroxides included in the present study. On strong hydrolysis oleate ozonides yield nonaldehyde (among other products) while the similar decomposition of diheptanol peroxide yields the lower homologue, heptaldehyde, which was found to possess pronounced anthelmintic properties (5). Diheptanol peroxide was selected partly for its inherent stability. It was hoped that this substance might decompose sufficiently slowly in the animal body to exert a maximal anthelmintic action. Many other peroxides are available, *e. g.*, the acyl peroxides containing the group R—CO—O—O— and the alkyl peroxides containing the group R—O—O—, but they are characterized by great chemical instability. Ozonized ethyl oleate, ozonized cottonseed oil and ozonized olive oil were selected as stable and readily available materials.

We have found that the ozonides and diheptanol peroxide are just as effective *in vitro* as is oil of chenopodium. Also a single dose of an ozonide or of diheptanol peroxide effects a complete cure in ascariasis of dogs. In one comparative experiment, extending over a four months' period and requiring about five hundred dogs, the toxicity and therapeutic efficiency of diheptanol peroxide and ozonized cottonseed oil were compared with those of oil of chenopodium. Our work unfortunately had to be discontinued before precise values for the therapeutic indices of the new drugs and for oil of chenopodium, tested under the same conditions, had been obtained. However, the results already secured strongly indicate the usefulness of the new anthelmintics. In view of this and the large expenditure of time and experimental animals, the work is being presented at this time.

Oil of chenopodium (and ascaridole as well) gave rise to pronounced toxic symtoms in the dogs, *e. g.*, convulsions and irritation of the gastrointestinal mucosa, followed in the case of the larger doses by death, whereas toxic and lethal effects were not observed after administration of diheptanol peroxide and the ozonides. In the case of the ozonized vegetable oils, the drug exhibited a favorable action,

[1] One drug, ozonized cottonseed oil, has also been given to a few hogs with ascariasis. The results were uniformly good and one animal was completely cured. Too few experiments, however, have been done up to this time to draw any conclusions regarding efficacy or dosage.

possibly nutritional, aside from the anthelmintic action, since the dogs receiving this treatment thrived better than the controls. At this stage of the work the maximum tolerated doses of the ozonides and of diheptanol peroxide cannot be given since all doses which were mechanically administrable were without harmful effect. A number of animals have been given several doses, each far above the therapeutic requirement, with general improvement of health rather than toxic symptoms following the treatment. It is possible that better results could be realized by substituting a multiple dose for the single dose treatment, but this has not yet been tried.

EXPERIMENTAL PART.

The ozonides were prepared by passing a stream of oxygen containing 4% of ozone into the compound or oil dissolved in ethyl acetate. The reaction mixture was surrounded by ice during the ozonization. The solvent and dissolved gases were removed by distillation at 35–40° in high vacuum. The ozonized products were very viscous oils (except the quite fluid ozonized ethyl oleate) which became solid in the refrigerator. They retained their anthelmintic potency indefinitely and altered little in appearance on standing. Unlike many members of this class of compounds, the ozonides studied were quite safe to handle and showed no tendency to decompose spontaneously or explosively. It was possible to heat them over a free flame in open beakers without causing violent decomposition.

There is some evidence to show that the potency of the ozonides is dependent on the use of a solvent during ozonization, and on the temperature of the mixture during ozonization. Also it appears that incipient decomposition of the ozonized cottonseed oil, induced by heat and moisture, raises the potency. A systematic investigation of the preparation and decomposition of the ozonides under various environmental conditions has not yet been made. It is sufficient for the purposes of this report that a product of constant potency can be obtained by the method described.

The diheptanol peroxide was prepared according to the directions of Rieche (6). As he states, this peroxide can be boiled with water without appreciable decomposition. It is therefore safe to handle and not subject to deterioration in storage. The oil of chenopodium was U. S. P. The ascaridole was obtained from Eastman Kodak and redistilled, the fraction boiling at 97–98° at 8 mm. being used. The oils used were standard commercial products of the best grade. The ethyl oleate was the practical grade from Eastman Kodak.

THE IN VITRO EXPERIMENTS.

The results summarized in Table I were obtained by the assay procedure previously described (1). Since water was an unsuitable dispersion medium, a 1:9 mixture of 95% ethyl alcohol and water was used. Even then the emulsions of the ozonized vegetable oils were not as homogeneous as that of the ozonized ethyl oleate. However, the results of bioassay could be duplicated and therefore the dilute alcohol emulsions can be regarded as satisfactory. This was not true of the diheptanol peroxide which separated from the dilute alcohol to varying extents as a solid. Warm, heavy white mineral oil was used to disperse this compound. The swine ascarids survived twenty-four hours' immersion in the mineral oil to which no peroxide had been added. The 1:9 dilute alcohol alone affects the worms in a very constant manner from season to season, paralyzing forty to fifty per cent in four hours and killing none. It is noteworthy that whereas the dilute alcohol emulsions of the ozonized vegetable oils lose their potency after a few days, the emulsions of ozonized ethyl oleate retain their potency for at least several months.

TABLE I.—EFFECT OF VARIOUS OZONIDES AND OF DIHEPTANOL PEROXIDE ON ASCARIS LUMBRICOIDES IN VITRO.

Material.	Concn. %	Medium.	No. of Worms.	% Paralyzed, Hrs. 1.	2.	3.	4.	% Killed, Hrs. 1.	2.	3.	4.
Ethyl Oleate Ozonide	0.1	10% Alc.	10	...	20	10	60	...	...	30	40
" " "	0.2	" "	20	...	35	10	0	0	45	70	100
" " "	0.2	" "	10	...	30	...	10	...	40	70	80
" " "	0.3	" "	10	...	30	0	0	0	60	90	100
" " "	0.4	" "	20	...	30	0	0	0	50	85	100
" " "	0.5	" "	20	5	30	...	...	...	55	100	...
" " "	0.5	" "	60	10	20	5	...	10	65	100	...
" " "	0.5	" "	20	45	...	...	...	40	90	100	...
" " "	0.5	Mineral Oil	20	...	...	70	...	...	...	...	80
" " "	0.97	10% Alc.	10	10	20	30	...	60	90	100	...
" " "	1.0	" "	20	30	5	...	...	50	90	95	...
Ethyl Oleate	0.5	" "	20	...	10	20	35	5	10	20	25
Oleic Acid Ozonide	0.2	" "	20	...	5	25	35	...	...	10	...
" " "	0.5	" "	20	...	10	25	35	...	30	45	60
Ozonized Cottonseed Oil	0.1	" "	20	...	...	...	20	...	...	...	15
" " "	0.1	" "	20	...	...	10	35	...	...	...	0
" " "	0.1	" "	10	...	10	20	30	...	...	...	10
" " "	0.3	" "	10	10	10	20	30	...	30	40	40
" " "	0.3	" "	40	15	35	35	30	...	10	35	50
" " "	0.3	" "	10	20	10	20	20	...	20	30	50
" " "	0.3	" "	20	15	30	10	40	...	30	60	60
" " "	0.3	" "	10	10	30	0	10	10	60	80	90
" " "	0.4	" "	10	80	70	20	20	10	30	60	80
" " "	0.5	" "	20	80	75	35	15	0	25	65	75
Ozonized Olive Oil	0.1	" "	20	...	...	0	0	...	...	0	0
" " "	0.3	" "	20	...	...	20	30	...	...	0	0
" " "	0.3	" "	20	5	40	40	40	0	5	5	20
" " "	0.5	" "	20	45	30	...	...	45	90	100	...
" " "	0.5	" "	20	15	25	5	5	30	35	75	85
" " "	0.5	" "	10	40	...	...	...	...	50	70	80
" " "	0.5	" "	15	...	25	45	45	...	75	40	60
" " "	0.5	" "	20	20	20	0	5	0	60	90	95
" " "	1.0	" "	20	30	...	...	...	55	95	100	...
Olive Oil	0.5	" "	20	...	...	15	25	...	...	0	0
" "	1.0	" "	20	...	...	25	25	...	...	0	0
Diheptanol Peroxide	0.1	" "	20	...	...	...	0	...	...	...	0
" "	0.15	Mineral Oil	10	...	...	20	20	...	...	...	0
" "	0.2	10% Alc.	20	...	30	20	30	...	0	15	20
" "	0.2	" "	20	...	50	25	40	...	0	40	40
" "	0.25	" "	20	...	0	30	40	...	0	0	10
" "	0.25	" "	20	...	50	70	65	...	0	0	5
" "	0.25	Mineral Oil	10	...	...	50	40	...	...	30	60
" "	0.3	10% Alc.	20	...	65	55	40	...	0	10	45
" "	0.33	Mineral Oil	50	...	40	...	...	20	100	...	...
" "	0.4	10% Alc.	20	...	65	25	35	...	0	45	50
" "	0.4	" "	20	...	35	50	40	...	0	10	25
Mineral Oil	100.0	.....	20	0	0	0	0	0	0	0	0
Alcohol	10.0	H_2O	10	...	...	40	40	...	...	...	0

TABLE I.—(*Continued.*)

Alcohol	10.0	"	10	...	...	40	40	...	...	...	0
"	10.0	"	10	...	0	50	50	...	...	...	0
"	10.0	"	10	...	0	30	30	...	...	10	...
"	10.0	"	10	...	...	60	60	...	...	...	0
"	10.0	"	10	...	...	50	50	...	...	...	0
Chenopodium Oil	0.4	"	85	...	74	...	...	...	...	75	80
Ascaridole A	0.1	"	24	...	100	...	...	...	...	91	...
" B	0.1	"	12	...	0	91	...	...	...	0	0
" B	0.2	"	27	...	44	85	...	...	...	52	89
" B	0.4	"	15	...	87	...	...	...	...	87	...
Hydrogen Peroxide	0.033	"	20	...	0	0	...	...	...	0	0
" "	0.1	"	32	...	91	...	...	...	...	100	0

Two interesting facts emerge from these experiments with Ascaris lumbricoides; all of the peroxides and ozonides paralyze and kill the worms, and those materials containing more peroxide oxygen are more potent. As might be expected, the increase in potency with increase in peroxide oxygen content is not strictly proportional. On the basis of peroxide oxygen content alone, the minimum effective concentrations should be directly proportional to the quantities of the several drugs which contain one equivalent of active oxygen. Hydrogen peroxide was definitely toxic to the worm at 0.1 per cent concentration. Equivalent effectiveness in the case of ascaridole would not have been expected in concentrations under 0.49 per cent, and with diheptanol peroxide, ozonized olive oil and ozonized ethyl oleate, not in concentrations under 0.79, 0.87 and 0.91 per cent, respectively. Actually, in spite of the poor dispersion of the materials low in peroxide oxygen, lower concentrations than those predicted were markedly effective. Thus 0.1 per cent ascaridole, 0.33 per cent diheptanol peroxide, 0.3–0.5 per cent ozonized ethyl oleate, 0.3–0.5 per cent ozonized cottonseed oil and 0.5 per cent ozonized oil were approximately as toxic as 0.1 per cent hydrogen peroxide. These relations are shown in Table II. It would be premature to give an interpretation of these results.

TABLE II.—COMPARISON OF CHEMICALLY EQUIVALENT CONCENTRATIONS AND ACTUALLY EFFECTIVE CONCENTRATIONS.

Substance.	Molecular Weights.	Equivalent Weights.	Ratio of Equivalent Weights.	% Equivalent Effective Concentrations.	Actually Effective Concentrations.
(*a*) Hydrogen Peroxide	34	34	.....	0.1	0.1
(*b*) Ascaridole	168	168	$\frac{b}{a} = 4.9$	0.49	0.1–0.2
(*c*) Diheptanol Peroxide	268	268	$\frac{c}{a} = 7.9$	0.79	0.33
(*d*) Glyceryl Trioleate Triozonide	1029	343	$\frac{d}{a} = 8.7$	0.87	0.5
(*e*) Ethyl Oleate Ozonide	358	358	$\frac{e}{a} = 9.1$	0.91	0.3–0.5

THE EXPERIMENTS WITH DOGS.

For determining the anthelmintic efficiency of diheptanol peroxide and ozonized cottonseed oil relative to that of oil of chenopodium, we used puppies ranging in weight from one to two Kg. Ozonized olive oil, ozonized ethyl oleate and heptaldehyde (6) also expelled large quantities of worms from larger dogs, but these animals were not submitted to autopsy so that the efficiency of the treatment was not absolutely determined. The puppies were usually quite sick when received. They were kept under observation for at least one week before treating, during which time fecal examination for ascarid eggs was made. After segregation in individual cages, the

clinical condition of each animal was observed daily. The puppies were fed three times daily on a well-planned diet. The cages were frequently cleaned and the room temperature maintained constantly at 70–75°. In spite of careful handling the mortality among the puppies was very high. Table III presents conditions as observed over a several weeks' period. It is seen that the mortality among the control puppies was higher than that among any of the treated animals with the exception of those receiving oil of chenopodium.

TABLE III.—COMPARISON OF MORTALITY IN CONTROL AND TREATED ANIMALS.

	% Dead before Day of Treatment.	% Dead after 2 Days.	% Dead after 4 Days.	Dosage Gm./Kg.
Controls	44.7	36.9	48	.....
Chenopodium Oil	..	60	78.3	0.05–0.2
Diheptanol Peroxide	..	20	30	0.1 –0.2
Ozonized Cottonseed Oil	..	13.3	20	1.0 –2.0

The puppies harboring ascarids (*Toxocara canis*) were starved for twenty-four hours before treating. The drugs were administered in gelatin capsules. The administration of purgatives with the anthelmintics was not tried. The number of ascarids passed each day by rectum, before and after administration of the drug, was observed. These worms were always dead when seen but some may have been alive at the moment of passage. Some of the experiments are summarized in Table IV. Only those animals are included which died or which were sacrificed one to ten days after treatment and which had infestations of more than five ascarids. Many of the dogs which showed ascarid eggs in the feces were found later to pass or to have harbored only one or two parasites. It seems undesirable to include these animals whether the worms were expelled or not.

TABLE IV.—THERAPEUTIC EXPERIMENTS—CANINE ASCARIASIS; PERCENTAGE OF TOTAL WORMS REMOVED—ONE DOSE TREATMENT.

	Dose Gm./Kg.	No. of Animals.	Worms Present.	Worms Removed.	% Removed.
Diheptanol Peroxide (solid)	0.2	6	129	48	37
" " "	0.3	2	25	22	88
" " "	0.5	3	36	13	36
" " "	1.0	8	138	128	93
" " (in alc.)	0.2	4	51	28	55
" " "	0.5	4	76	63	83
Ozonized Cottonseed Oil	0.2	2	29	28	96
" " "	0.5	4	64	61	95
" " "	1.0	9	126	106	84[1]
" " "	2.0	4	68	68	100
Chenopodium Oil	0.02	1	14	6	43
" "	0.03	4	55	43	78
" "	0.05	6	72	66	92
" "	0.1	4	71	71	100
" "	0.2	3	46	46	100
Controls	..	30	426	62	14

[1] 8 animals showed 100% removed.

These data show that the minimum therapeutic doses of ozonized cottonseed oil and diheptanol peroxide are higher than that of oil of chenopodium. Diheptanol peroxide dissolved in alcohol is more effective than the solid alone. The somewhat erratic results obtained with the solid peroxide are probably to be explained by poor distribution of the drug in the intestine. Often the peroxide was passed in the feces in a mass of the shape of the capsule and apparently undiminished in size. In view of this circumstance, the positive results obtained are quite startling. Ozonized cottonseed oil was more effective than diheptanol peroxide, doses as low as 0.2 Gm. per Kg. being curative. A few observations for individual puppies from typical experiments are reproduced in Table V. It is seen that in every case the rate of elimination of ascarids was greater after administration of the drug than before.

TABLE V.—THERAPEUTIC EXPERIMENTS—CANINE ASCARIASIS; RATE OF WORM ELIMINATION.

No.	Dose Rate Gm./Kg.	Survival (Days).	Cure %	Rate Eliminated Worms Day. Before.	Rate Eliminated Worms Day. After.	No. of Worms Eliminated. Before.	No. of Worms Eliminated. After.	No. of Worms Eliminated. Autopsy.
			Diheptanol Peroxide (Solid).					
161	1.02	8	100	0.2	14.0	1	14	0
69	0.30	12	100	0.2	13.0	2	17	0
43	0.20	12	28.4	1.1	2.1	8	23	58
			Ozonized Cottonseed Oil.					
189	1.00	7	100	0.4	7.0	3	21	0
334	0.48	15	100	0.0	9.0	0	18	0
			Chenopodium Oil.					
118	0.10	4	100	0.4	10.5	2	21	0
258	0.05	8	100	0.7	4.7	5	28	0
			Ozonized Olive Oil.					
	1.0	12	100			2	27	0
	1.0	14	100			1	8	0
	1.0	30	...			0	6	..[1]
	2.0	30	...			0	22	..[1]
	3.0	30	...			0	14	..[1]
	3.0	30	...			0	10	..[1]
			Ozonized Ethyl Oleate.					
	3.0	30	...			0	12	..[1]

[1] A second dose after three weeks did not expel any more worms.

Unfortunately we do not yet have enough experiments to give a precise quantitative picture of the toxicity of ozonized cottonseed oil or diheptanol peroxide. The puppy experiments do not serve us here because of the poor clinical condition when treated. However, the data in Table III and that from many similar experiments do indicate that the new drugs are much less toxic than oil of chenopodium. Some supplementary experiments were carried out using larger (five to fifteen Kg.) dogs in apparent good health with the results shown in Table VI. The animals which received sub-lethal doses of ascaridole and oil of chenopodium invariably showed convulsions and prostration, while the peroxide and ozonide dogs never did. The deaths following the administration of ozonized oil were surprising in view of the beneficial results from this material with the puppies. We are inclined to view these deaths as not due to the drug, although mechanical damage may have been done since the doses of this viscous product became excessively large with the larger animals.

TABLE VI.—COMPARISON OF LARGE DOSES OF CHENOPODIUM OIL, ASCARIDOLE, OZONIZED COTTONSEED OIL AND DIHEPTANOL PEROXIDE ON LARGE DOGS.

	Dose Gm./Kg.	No. of Dogs.	% Deaths.
Chenopodium Oil	0.2	2	0
	0.5	6	33
	0.8	4	50
	1.0	2	100
Ascaridole	0.2	2	0
	0.5	5	60
	0.8	4	75
	1.0	1	100
Ozonized Cottonseed Oil	5.0	3	33
	10.0	4	50

Diheptanol Peroxide	0.2	2	0
	0.5	4	25
	1.0	3	0
	3.0	5	0
	5.0	1	0

These experiments indicate that organic ozonides and diheptanol peroxide generally are toxic to swine ascarids *in vitro* and are valuable in the treatment of dogs infested with ascarids. They show that ozonized cottonseed oil and diheptanol peroxide have a higher therapeutic index than oil of chenopodium in canine ascariasis, although they do not determine the index. The ozonized oil seems superior to the solid peroxide. The experiments suggest that organic ozonides and possibly peroxides may find wide application in the treatment of metazoan and protozoan disease, and offer a new group of organic compounds for exploitation by the experimental therapeutist. This seems timely just now when these diseases are being recognized as important, since the drugs so far put forward for their treatment have been limited to representatives of a few chemical classes, characterized generally by a too high toxicity for the host.

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(4) *Ibid.*, page 152.

(5) Unpublished work by authors.

(6) *Ibid.*, page 59.

DRUG EXTRACTION. XI. THE EXTRACTION OF JALAP.*,[1]

BY WILLIAM J. HUSA[2] AND PAUL FEHDER.

In an earlier paper (1) a report was made of the effect of solvents in relation to swelling, penetration, imbibition and extraction of jalap. A further study has been made of the extraction of jalap, including such factors as fineness of powder, variation in solvents and methods of assay.

EXPERIMENTAL DATA.

Effect of Fineness of Powder on Percolation.—100-Gm. portions of jalap in Nos. 20, 40, 60 and 80 powders were percolated with alcohol, the percolates being collected in successive fractions of 100 cc., 100 cc. and 300 cc. in each case. Assay results on the percolates indicated that within the limits of No. 20 and No. 80 powder, the fineness of powder has practically no effect on the rate of extraction of resin by percolation.

Effect of Variation in Solvents on Rate of Extraction.—Percolation experiments were conducted using jalap in No. 60 powder and a series of alcohol-water mixtures. The drug used contained 9.4% moisture and the resin content was 7.3% by the U. S. P. X method of assay and 6.0% by Warren's assay method (2). In each case 200 Gm. of drug were moistened with 100 cc. of menstruum, packed in the percolator and menstruum added. After allowing a maceration period of 48 hours, percolation was allowed to proceed at a rate of 10 drops per minute, the percolate being collected in successive fractions of 200 cc., 200 cc. and 600 cc. The various fractions of percolate were assayed for resin and total extractive.

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* Scientific Section, A. PH. A., Dallas meeting, 1936.

[1] This paper is based on part of a dissertation presented to the Graduate Council of the University of Florida by Paul Fehder, in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

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TABLE I.—PERCOLATION OF JALAP WITH VARIOUS ALCOHOL-WATER MIXTURES.

A. Gm. of Resin in Various Fractions of Percolate (by Warren's Assay Method).

Percolates.	Absolute Alcohol.	95% Alcohol.	Alc. 9 Vol.—Water 1 Vol.	Alc. 4 Vol.—Water 1 Vol.
200 cc.	12.1	12.0	12.3	11.7
200 cc.	0.1	0.2	0.2	0.2
600 cc.	0.2	0.2	0.2	0.1
Total	12.4	12.4	12.7	12.0

B. Gm. of Resin in Various Fractions of Percolate (by U. S. P. X Assay Method).

200 cc.	13.2	13.5	13.7	14.3
200 cc.	0.2	0.5	0.4	0.3
600 cc.	0.1	0.2	0.2	0.2
Total	13.5	14.2	14.3	14.8

C. Gm. Total Extractive in Various Fractions of Percolate.

200 cc.	17.9	19.6	25.0	35.4
200 cc.	2.1	5.0	13.7	21.4
600 cc.	1.9	3.7	13.9	9.7
Total	21.9	28.3	52.6	66.5

The results in Table I show that the amount of resin obtained increases slightly with decreasing alcoholic content of the menstrua by the U. S. P. X assay, but is practically the same with each of the menstrua by Warren's assay method. The greatest portion of the extracted resin is contained in the first 200 cc. of percolate. The amount of total extractive increases with decreasing alcoholic content of the menstrua.

Comparison of U. S. P. X and N. F. VI Methods of Preparing Resin of Jalap.—The U. S. P. X used alcohol as a menstruum for the preparation of resin of jalap while the N. F. VI specifies a mixture of 9 volumes of alcohol and 1 volume of water as the menstruum. In the present study, tests were carried out to determine whether or not the change in official menstruum has any effect on the purity or yield of resin of jalap. Two different lots of resin of jalap were prepared from 500-Gm. portions of jalap in No. 60 powder, using alcohol as the menstruum; each 500-Gm. portion of drug was moistened with 250 cc. of menstruum before packing and there was a maceration period of 48 hours after packing. Percolation was carried out at the rate of 0.6 to 0.8 cc. per minute, 1250 cc. of percolate being collected. The resin was prepared from the percolate as specified in the U. S. P. X. Two portions of resin of jalap were also prepared from 500-Gm. portions of jalap, keeping all experimental details the same as before except that the N. F. VI menstruum of alcohol 9 volumes—water 1 volume was used.

The powdered jalap used was assayed by three different methods and the resin content was found to be as follows: U. S. P. X assay, 7.9%; N. F. VI assay, 7.1%; Warren's assay, 6.3%. The average yield of resin of jalap obtained from the two 500-Gm. portions of jalap by the U. S. P. X method was 6.6%, while by the N. F. VI method the yield was 6.7%.

TABLE II.—ASSAY RESULTS ON RESIN OF JALAP

Percentage of Resin by Various Assay Methods.

Method of Preparation of Resin of Jalap.	U. S. P. X Assay.	U. S. P. X Assay (Corrected for Citrate Error).	N. F. VI Assay.	N. F. VI Assay (Corrected for Dissolved Solids in Solvents.	Warren's Assay Method.	Average of All the Methods.
U. S. P. X	102.6	94.0	97.7	94.6	92.5	96.3
N. F. VI	103.6	93.5	96.5	94.9	93.0	96.3

Numerous assays were carried out on the resins prepared by the U. S. P. X and N. F. VI methods in order to determine whether the change in official menstruum caused any change in the purity of the resin.

The results in Table II indicate that the U. S. P. X and N. F. VI resins of jalap are of equal purity. It is well known that in the U. S. P. X method of assay some potassium citrate contaminates the resin and is weighed as resin, thus making the results come out over 100%. All the other assay methods gave results below 100%; this would seem to indicate that some of the resin is lost during the assay. In Warren's method, the resin present in the assay sample is washed three successive times with 15-cc. portions of water. It is impracticable to make a direct determination of the amount of resin which dissolves in the wash water along with the impurities which the washing process is intended to remove. However, it was thought that by repeatedly washing the same sample of resin it should be possible to get a clearer idea regarding the possible loss of resin during the washing process. Extensive experiments were carried out on this point. A typical result, based on the average of four determinations, is as follows.

Analysis of a sample of jalap by Warren's method showed it to contain 6.3% resin. After washing the resin again with three 15-cc. portions of water the amount of resin which remained corresponded to 6.0% of the weight of the original drug. After a third, fourth, fifth, sixth and seventh washing, the weight of resin which remained corresponded to 5.8%, 5.6%, 5.5%, 5.3% and 5.2%, respectively, of the weight of the drug. In other words, about 2.5 to 3 per cent of the resin present was lost each time the assay process was repeated. Such a constant loss could hardly be ascribed to removal of impurities and is rather to be viewed as a loss of resin during the assay. Part of this loss appears to be due to a slight solubility of the resin in water.

DISCUSSION OF RESULTS.

It was found that within the limits of No. 20 and No. 80 powder, the fineness of powder has practically no effect on the rate of extraction of jalap by percolation. These results are in accord with the conclusions reached by Husa and Huyck (3) on belladonna root; it was shown that within the limits of No. 20 and No. 80 powder the fineness of powder is of minor importance in the extraction of the alkaloids of belladonna root by percolation.

In the experiment on variation in solvents, it was found that the amount of resin was practically the same for the various menstrua when the assays were made by Warren's method, while the U. S. P. X method of assay seemed to indicate slightly more efficient extraction of resin as the alcoholic content of the four menstrua decreased. It would seem that the apparently higher results in the U. S. P. X assay method may be due to the retention of other constituents of the extractive matter in the resin obtained in the assay. The results in the percolation experiments are in accord with the data obtained previously on the extraction of jalap by a maceration process (1).

The results indicate that the change from the U. S. P. X menstruum (alcohol) to the N. F. VI menstruum (alcohol 9 volumes—water 1 volume) increases the rate of extraction and yield of Resin of Jalap to only a very slight extent, if at all. On the other hand, the use of the N. F. VI menstruum causes a great increase in the total extractive matter in the percolate, thus increasing the bulk of syrupy extract which must be handled and greatly increasing the proportion of impurities to be removed during the precipitation and washing of the resin.

SUMMARY.

Percolation tests show that within the limits of No. 20 and No. 80 powder, the fineness of powder is of minor importance in the extraction of jalap.

The N. F. VI menstruum for Resin of Jalap (alcohol 9 volumes—water 1 volume) has no advantage over the menstruum of the U. S. P. X (alcohol) from the standpoint of rate of extraction, purity and yield of resin. The N. F. VI menstruum has the disadvantage of causing a great increase in total extracted matter, thus increasing the bulk of syrupy extract to be handled and greatly increasing the proportion of impurities to be removed during the precipitation and washing of the resin.

Comparative results on the assay of resin of jalap by several assay methods are presented.

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A STUDY OF PRECIPITATION IN FLUIDEXTRACT OF SENNA I.*[1]

A Comparative Study of Precipitation in the Official Fluidextracts of Senna.

BY KARL L. KAUFMAN[2] AND C. O. LEE.[3]

INTRODUCTION.

Most fluidextracts may be filtered, or decanted, and bottled for the trade within a rather short period of time after they have been made. A few of them, however, continue to sediment over long periods of time, yielding unsightly preparations. Among them is the official fluidextract of senna.

This investigation has been made with the view to finding ways of preventing, or hastening, the completion of sedimentation in fluidextract of senna. A study of the merits of various menstruums has been made together with other factors bearing upon the subject.

HISTORICAL.

Fluidextract of senna was first official in the U. S. Pharmacopœia of 1860 and has been retained in each revision since then. In spite of its unsightly appearance, it has remained official because of its wide use as a valuable medicinal agent.

Soon after their introduction into the Pharmacopœia, fluidextracts became the objects of criticism and study. From the point of view of elegant preparations, many of them are unsatisfactory, even to-day, because of their continued precipitation.

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* Scientific Section, A. Ph. A., Dallas meeting, 1936.

[1] Based upon a thesis submitted to the Faculty of Purdue University by Karl L. Kaufman in partial fulfilment of the requirements for the Degree of Doctor of Philosophy.

[2] J. K. Lilly Fellow, Purdue University, School of Pharmacy, 1933–1936.

[3] Professor of Pharmacy, Purdue University, School of Pharmacy.

Maisch (1859) and Thayer (1859) recommended the use of sugar, and menstruums high in alcoholic content, as general means of reducing the precipitation in fluidextracts. Groves (1868) examined the precipitates in old samples of Liquor Sennæ and found sulfates, phosphates, calcium, and resinous acids present. He believed that the acids originated from the slow decomposition of an unstable glucoside.

Lloyd (1881, *et seq.*), in a series of papers, discussed the problem of precipitation in fluidextracts.

Tschirch and Hiepe (1901), in studying the deposit in senna infusions, obtained a yellowish substance to which they assigned the formula $C_{14}H_{10}O_5$. Tutin (1913) was unable to obtain the product which Tschirch and Hiepe had described, but believed it to be a mixture of rhein and aloe-emodin. Such a mixture, in about equal proportions, should have the properties ascribed to the substance having the formula, $C_{14}H_{10}O_5$.

Plenderlieth (1911) found the precipitate in senna infusions to be composed of two microcrystalline forms. One was the yellow substance which had been described by Tschirch and Hiepe. The other was calcium tartrate. Wallis (1913) extended Plenderlieth's work and proved that calcium tartrate did not exist preformed in senna leaves. He also showed that the precipitate was not due to enzyme action, or oxidation.

Broeksmit (1916) suggested that the infusion of senna, of the Holland Pharmacopœia, be stabilized by precipitating the calcium salts with magnesium sulfate, and filtering off the calcium sulfate.

Scoville (1927) found that a fifty per cent tincture of senna, which contained sufficient sodium acetate to saturate its water content, did not precipitate for a period of eight weeks. He did not explain his observations, but recommended the use of glycerolic menstruums.

Zanotti (1929) claimed that the precipitate in fluidextract of senna contained the active principles of the drug. He based his claims upon the fact that it gave positive Borntraeger reactions.

A STUDY OF THE OFFICIAL FLUIDEXTRACTS OF SENNA.

MEASURING THE SEDIMENT.

The fluidextracts which we prepared for this study were made from a batch of Alexandria senna, supplied to us by the Eli Lilly and Company. It conformed to the official tests for identity and purity.

Precipitates which form in fluidextracts of senna are amorphous, and dark in color. They do not always settle compactly, and for that reason cannot be photographed. It was necessary, therefore, to resort to some arbitrary means of indicating the relative amounts of sediments which formed in the various samples. This has been done by means of plus (+) signs. Their significance is as follows:

\+ about 1 mm. of deposit
\++ about 3 mm. of deposit
\+++ about 5 mm. of deposit
\++++ about 7 mm. of deposit
\+++++ about 9 mm. of deposit

A COMPARISON OF THE OFFICIAL FORMULAS.

The official fluidextracts of senna, including those of the U. S. Pharmacopœias IV to X, were prepared and observed for precipitation, at intervals, over a period of many months, in most cases for more than a year. Our observations are recorded in Table I. The ages of the fluidextracts are expressed in days and the amounts of the precipitates in the arbitrary manner as previously explained.

It will be observed that the U. S. P. VII fluidextract precipitated much more slowly than the other formulas for a time, but after about a year it was as unsightly as the others.

TABLE I.

U. S. P. IV.		U. S. P. V.		U. S. P. VI.		U. S. P. VII.		U. S. P. VIII.		U. S. P. IX.		U. S. P. X.	
Age in Days.	Precipitate.	Age in Days.	Precipitate.	Age in Days.	Precipitate.	Age in Days.	Precipitate.	Age in Days.	Precipitate.	Age in Days.	Precipitate.	Age in Days.	Precipitate.
10	+	10	+	20	+	8	+	15	+	12	+	8	+
25	++	25	++	40	+++	20	+	35	+	25	+	20	+
70	++++	73	++	55	+++	36	+	50	++	47	+++	51	++
97	++++	100	+++	100	++++	61	+	95	+++	82	+++	61	++++
134	++++	134	+++	127	++++	83	++	122	+++	127	+++	83	+++
216	++++	216	++++	161	++++	103	++	156	+++	153	++++	103	++++
355	++++	365	++++	244	+++++	300	++++	238	++++	269	+++++	300	+++++
.....		383	++[1]++	439	+++++	377	++++	408	+++[2]++	439	+++[2]++	.....	

[1] Precipitate shows in rather distinct layers.
[2] A chunky precipitate deposited on the walls.

HYDROGEN-ION CONCENTRATION.

In an effort to find a clue to the cause of prolonged precipitation in fluidextract of senna, a series of p_H readings were taken upon all the official preparations. The age of the fluidextract, at which the p_H was taken, is expressed in days. The readings are given in Table II.

It will be observed that the increase in p_H in these preparations is rather gradual for the first few months. Furthermore, those which were about two years old showed decided increases in p_H.

Inasmuch as these measurements were made with a potentiometer, using a saturated calomel-quinhydrone electrode, they represent at best only relative values. These, however, are significant and deserving of further study.

TABLE II.

U. S. P. IV.		U. S. P. V.		U. S. P. VI.		U. S. P. VII.		U. S. P. VIII.		U. S. P. IX.		U. S. P. X.	
Age.[1]	p_H.[2]	Age.	p_H.	Age.	p_H.	Age.	p_H.	Age.	p_H.	Age.	p_H.	Age.	p_H.
10	5.40	10	5.53	8	5.45	35	5.42	14	5.66	20	5.24	40	5.15
21	5.42	21	6.28	19	5.45	53	5.46	34	5.70	45	5.37	61	5.30
41	5.49	41	6.18	30	5.57	74	5.62	45	5.82	66	6.00	82	5.25
68	5.47	68	5.83	71	5.63	105	5.79	65	5.79	97	5.69	102	5.35
95	5.41	95	5.89	156	5.85	850	9.00	150	6.10	842	7.69	133	5.30
123	5.32	123	5.66	816	8.43	...	...	810	9.00	...	...	...	...
786	7.18	786	8.23	...	..	...	...	...	...	...	...	...	...

(1) Age is given in days.
(2) p_H values measured at 23° C.

THE SEDIMENTATION PERIOD FOR FLUIDEXTRACT OF SENNA.

It has been said that the usual period allowed for sedimentation in fluidextracts is thirty days. Since fluidextract of senna behaves so badly it was thought that a period, longer than thirty days should be allowed for it. In an effort to settle this question the following study was made.

A liter of the official fluidextract of senna was prepared, filtered, and divided into four parts. One portion served as a control, while the other three were filtered at 30, 60 and 90 day intervals, respectively. Frequent observations were made upon these four samples in order to make a comparative study of their precipitants. Our observations may be briefly stated as follows:

1. At the end of a year no differences could be observed in the amount and character of the sediment in each of the four samples.

2. These studies were made many times upon commercial and laboratory samples. A commercial sample which was more than two years old continued to form a sediment after being filtered.

From these observations, we are led to believe that precipitation in fluidextract of senna is due to a slow chemical change, the cause of which is undetermined.

SUMMARY.

1. The literature upon precipitation in senna preparations has been briefly reviewed.

2. A comparative study of sedimentation in the official fluidextracts of senna has been reported.

3. It has been shown that fluidextract of senna continues to precipitate over long periods of time. The practice of allowing fluidextracts to stand for thirty days before being filtered and bottled for the trade is inadequate for fluidextract of senna.

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TASTE TESTS. IV. RELATIVE BITTERNESS.*

BY FREDERICK M. SCHOLL AND JAMES C. MUNCH.[1]

Previous taste studies have led to the development of a standard method of taste evaluation (1, 2, 3, 4) which has been used in studies on strychnine (5). Tastes, for the purpose of our investigation, have been (arbitrarily) sub-divided into four groups: bitter, sour, sweet and salt. This report deals with the results obtained in studies of relative bitterness. After rinsing the mouth with distilled water, one or two cc. of test solution was placed in the mouth and held there for exactly one minute. The solution was then ejected, and the mouth rinsed with distilled water. An interval of 15 to 30 minutes elapsed between each test. In general, solutions were tasted which were obviously more bitter than the threshold, then the successive dilutions tried until a dilution had been reached which did not appear to have a bitter taste. In successive tests on subsequent days, solutions

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[1] Abstracted from B.S. thesis presented by F. M. Scholl, Department of Research, School of Pharmacy, Temple University, Philadelphia, Pa.

were prepared and tasted starting with the previously ineffective concentrations, until the bitterness threshold concentration had been reached. In some of these examinations the solutions were prepared by one member of the group, and given code designations, so that the subjects would not know what was being tasted. Efforts were made to determine the threshold within a range of plus or minus 10%.

The results obtained have been recorded in mg./litre in Table I. Arbitrarily assigning a value of 100 to Quinine Alkaloid, the relative bitternesses have been calculated.

TABLE I.

Product.	Bitterness Threshold Mg./Liter.	Relative Bitterness.
Brucine	0.2–0.25	1000–1250
Strychnine	0.8	320.0
Quinine	2.5	100.0
Aloin	7.5	33.0
Theobromine	47.6	5.0
Quassia—F. E.	11.0	2.3
Quassia—Infusion	13.0	1.9
Condurango—F. E.	40.0	0.6
Cascara—F. E.	133.0	0.2
Elix. I. Q. & S.*	140.0	0.18
Sucrose Octoacetate	5.0	50.0

* Cc. per liter.

Brucine was three to four times bitterer than Strychnine, and Strychnine about three times as bitter as Quinine. In some preliminary studies, the quantities of Fluidextract of Eriodictyon required to mask these bitter tastes were in the same proportions.

Some difficulty was experienced in determining the threshold for N. F. Elixir of Iron, Quinine and Strychnine. Upon dilution the orange taste tended to persist more forcefully than the bitter taste of the alkaloids. The results obtained in tasting several samples of this product showed only fair agreement with the threshold values calculated from the known alkaloidal content.

Sucrose Octoacetate gave a persistent bitter taste which was somewhat more difficult to remove from the mouth and tongue than the bitter response for the alkaloids.

CONCLUSION.

Using a standardized technique, the threshold bitterness values have been determined for a number of substances.

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STRYCHNINE VIII. THE RELATIONSHIP OF BORAX AND CERTAIN OTHER CHEMICALS TO TOXICITY.*

JUSTUS C. WARD,[1] D. A. SPENCER[2] AND F. E. GARLOUGH.[3]

Earlier papers in this series presented findings in the Control Methods Research Laboratories of the United States Biological Survey relating to the effects of certain chemicals in modifying the bitter taste of strychnine, (1, 2, 3). The present study grew out of the fact that it was known that certain procedures affecting the bitterness of this alkaloid greatly modifies its toxicity. One case in point is that the addition of a methyl group to the strychnine molecule to form methyl strychnine causes a great reduction in the bitterness and at the same time lowers the toxicity decidedly (4).

Several other theories regarding strychnine action were given more attention in the present study than the taste-toxicity relationship, however. We used chemically unrelated substances in this work, and as a consequence will be forced to report our findings in a rather haphazard manner.

The matter of variation in physiological action of chemically pure strychnine alkaloid might conceivably be mentioned in any study reporting variation in strychnine action presumably due to incorporation with the alkaloid of a foreign chemical. Until the discovery that supposedly identical strychnines would vary decidedly in their killing efficiencies, a tremendous amount of work was done which cannot be compared critically with any later findings, because no reference standard for all tests had been deemed necessary. Within the past year, however, and since the report of our variation findings (5) we have adopted the policy of using a reference standard, so we have a reasonable relationship between various tests.

To emphasize the importance of this factor of variation further, we are presenting a brief summary of the detailed bioassays run at the laboratory during the past year as an introduction to the modification studies.

The system of testing used for all the tests reported in the body of this paper was a minor modification of that reported (5) last year. The rats used were of the same strain and were kept in the laboratory long enough to become acclimated and to have a uniform dietary history. The night before the test the animals were weighed and put into separate cages. They were given water, but no food. The next morning, the strychnine mixture to be tested was made into a suspension by means of 0.2% acacia in water. The animals were then stomach-tubed with the computed quantities in exactly the manner described before (5).

Readings were taken of the time of treatment, the time the animal went down in the first spasm (T/S), the duration of spasm period (T/T), and the time until

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death (T/D). Each series of animals used was given the same amounts by weight of strychnine alkaloid; namely, the doses used were 25.00, 22.50, 20.00, 17.50, 15.00, 12.50, 10.00 and 7.50 mg./Kg. Each test then required sixteen rats, as two rats were taken at each dosage. Appreciating the importance of the presence of survivals in a series of animals as far as the proper evaluating of an alkaloid was concerned, we adopted the system of dividing the averages in minutes obtained from the animals dying in the test—by the percentage of animals which succumb. In this way we represent the averages higher than they really are in proportion to the number of survivals—so that an indication is obtained of the effect of survivals on the average.

During the past year we have bioassayed eleven different lots of strychnine, received from five different manufacturers, in sufficient detail to demonstrate the variation of potency previously reported. A summary of these assays is of interest.

TABLE I.—VARIATION IN TOXICITY OF COMMERCIAL STRYCHNINE ALKALOIDS.

Manufacturer.	Number.	Averages. T/S.	T/T.	T/D.	Averages Interpolated for Survivals. T/S.	T/T.	T/D.
A	1	6.4	3.0	9.4	6.4	3.0	9.4
	2	8.0	3.2	11.2	8.0	3.2	11.2
B	1	15.5	5.0	20.5	16.5	5.3	21.8
C	1	15.5	3.0	18.5	16.5	3.2	19.7
	2	12.4	4.8	17.2	15.5	6.0	21.5
D	1	13.3	3.9	17.2	15.3	4.4	19.7
E	1	11.8	4.3	16.1	13.5	4.9	18.4
	2	10.0	4.5	14.5	11.5	5.2	16.7
	3	9.4	3.3	12.7	10.0	3.5	13.5
	4	7.6	4.7	12.3	7.6	4.7	12.3
	5	6.8	4.6	11.4	7.2	4.9	12.1

Also during the year we tested seven different samples which were sent to us under number only, for the purpose of checking the effectiveness of bioassay methods for detection of variation in strychnines of supposedly equal purity. The key to the point of origin of each of these samples is lacking, but the obvious differences are of value in this regard.

TABLE II.—VARIATION IN TOXICITY OF STRYCHNINE ALKALOIDS OF UNKNOWN ORIGIN.

Lot Number.	Averages. T/S.	T/T.	T/D.	Averages Interpolated for Survivals. T/S.	T/T.	T/D.
B 49106	6.85	3.4	10.2	6.8	3.4	10.2
B 52415	6.73	4.3	11.0	7.2	4.6	11.8
B 51528	11.2	3.4	14.6	13.8	4.2	18.0
B 48483	11.2	4.7	15.9	12.8	5.4	18.2
B 47914	12.0	3.6	15.6	14.8	4.4	19.2
B 46644	17.3	6.0	23.3	21.3	7.4	28.7
B 48127	18.9	5.2	24.1	23.3	6.4	29.7

From the viewpoint of economic poisoning it is apparent that there is little difference in the effectiveness of Lots 49106 and 52415; or of the next three samples; or of the last two, when compared with each other; but it is also evident that there

is a great deal of difference between the first two and the last two. The first lot had no survivors, while the second had only one, with average T/D's of 10.2 and 11.8. The sixth lot had three survivors, as did the seventh, and the T/D's were 28.7 and 29.7, respectively. In deciding about the suitability of these samples for economic poisoning use, we would promptly pass the first two lots for any purpose; we would pass the next three for rodent poisons for the less discriminating animals; and we would prefer to refuse to use the last two lots.

Largely because we have been working toward some way to decrease this undesirable "spread," the tests reported below have been run with several substances combined with the poison to determine their effects on strychnine action. Our studies followed several lines of investigation: (A) The use of substances with strychnine which might potentiate the toxicity of the alkaloid; (B) the use of substances which might change the absorption of the poison by the modification of some physiological function in the animal; (C) the use of chemicals which might retard strychnine action in any way. It is not a simple matter to divide the materials used because the results obtained did not always follow the lines we would have expected from a knowledge of their pharmacological actions. Accordingly, the distribution is made largely for a matter of convenience in comparison of results. Averages based on "survival corrected" figures will be used.

A. SUBSTANCES WHICH SEEM TO POTENTIATE STRYCHNINE ACTION.

(*a*)

Sodium Azide.			Check Series.		
T/S.	T/T.	T/D.	T/S.	T/T.	T/D.
4.3′	1.8′	6.1′	10.5′	4.1′	14.6′

(*b*) Borax (1/2 as much borax as strychnine in the suspension).

T/S.	T/T.	T/D.	T/S.	T/T.	T/D.
7.2′	3.1′	10.3′	10.5′	4.1′	14.6′
(2 times as much borax as strychnine.)					
6.6′	3.8′	10.4′	10.5′	4.1′	14.6′

(*c*) Sodium Thiosulfate. (3 times as much thiosulfate as strychnine.) Strychnine as the sulfate in both the series reported.

			Check Series.		
T/S.	T/T.	T/D.	T/S.	T/T.	T/D.
9.7′	8.7′	18.4′	14.1′	6.3′	20.4′

B. SUBSTANCES WHICH INCREASE THE SPEED OF STRYCHNINE ACTION DUE TO SOME MODIFICATION OF PHYSIOLOGICAL FUNCTION.

(*a*) Sodium Bicarbonate. (Equal quantities of soda and strychnine used.)

			Check Series.		
T/S.	T/T.	T/D.	T/S.	T/T.	T/D.
11.4′	3.9′	15.3′	13.8′	4.2′	18.0′

(*b*) Sodium Chloride (see under C-*e*).

C. SUBSTANCES WHICH DELAY STRYCHNINE ACTION.

(*a*) Tannic Acid. (Strychnine as the hydrochloride used.)

Dose Strychnine.	Dose Tannic Acid.	T/S.	T/T.	T/D.
20.00 mg./Kg.	20.00 mg./Kg.	11.0′	3.0′	14.0′
20.00 mg./Kg.	20.00 mg./Kg.	12.0′	11.0′	23.0′
20.00 mg./Kg.	20.00 mg./Kg.	27.0′	4.0	31.0
20.00 mg./Kg.	25.00 mg./Kg.	16.0	1.0	17.0
20.00 mg./Kg.	30.00 mg./Kg.	7.0	10.0	17.0
20.00 mg./Kg.	40.00 mg./Kg.	22.0	61.0	83.0
20.00 mg./Kg.	50.00 mg./Kg.	14.0	63.0	77.0
20.00 mg./Kg.	60.00 mg./Kg.	23.0	48.0	71.0

(*b*) Ethyl Alcohol. (Alcohol series was run with strychnine in 95% C_2H_5OH.)

	Test Series.			Check Series.		
Dose.	T/S.	T/T.	T/D.	T/S.	T/T.	T/D.
400 mg./Kg.	4.0′	25.0′	29.0′	4.0′	3.0′	7.0′
300 mg./Kg.	6.0	18.0	24.0	3.0	3.0	6.0
200 mg./Kg.	6.0	12.0	18.0	5.0	7.0	12.0
100 mg./Kg.	8.0	12.0	20.0	10.0	2.0	12.0
50 mg./Kg.	17.0	5.0	22.0		Survived.	
25 mg./Kg.	Died over night.				Survived.	

(*c*) Activated Calcium. (Test series was run with suspension in 100% calcium water.) Standard doses and 16 rat series.

Test Series.			Check Series.		
T/S.	T/T.	T/D.	T/S.	T/T.	T/D.
23.8′	5.5′	29.3′	11.6′	6.5′	18.1′

(*d*) Magnesium Chloride. (Strychnine used was in the form of the hydrochloride.)

1. Magnesium chloride $^1/_{10}$ the concentration of strychnine.
2. Magnesium chloride $^1/_4$ the concentration of strychnine.
3. Magnesium chloride $^1/_2$ the concentration of strychnine.

1.			2.			3.		
T/S.	T/T.	T/D.	T/S.	T/T.	T/D.	T/S.	T/T.	T/D.
10.5′	2.7′	13.2′	11.3′	5.2′	16.5′	13.2′	6.8′	20.0′

(*e*) Sodium Chloride.

1. Sodium chloride $^1/_2$ the concentration of strychnine.
2. Sodium chloride the same concentration as strychnine.
3. Sodium chloride 2 × the concentration of strychnine.
4. Sodium chloride 5 × the concentration of strychnine.

1.			2.			3.			4.			Check.		
T/S.	T/T.	T/D.	T/S.	T/T.	T/D.	T/S.	T/T.	T/D.	T/S.	T/T.	T/D.	T/S.	T/T.	T/D.
18.0′	6.2′	24.2′	6.9′	4.6′	11.5′	9.8′	6.3′	16.1′	18.8′	7.1′	25.9′	15.3′	4.8′	19.7′

In addition to the differentiated studies given above, an additional series of tests was run to determine the effect of powdered yellow dextrin on strychnine toxicity, when this material was used in varying concentrations. The following tabulation is not included in the above tests because larger doses were employed than those reported in the other experiments, in that the dosage range was from 12.50 to 31.75 mg./Kg.

1. 2.5 × as much dextrin as strychnine.
2. 5.0 × as much dextrin as strychnine.
3. 7.5 × as much dextrin as strychnine.
4. 10.0 × as much dextrin as strychnine.

1.			2.			3.			4.		
T/S.	T/T.	T/D.	T/S.	T/T.	T/D.	T/S.	T/T.	T/D.	T/S.	T/T.	T/D.
8.6′	2.8′	11.4′	8.4′	3.4′	11.8′	11.0′	4.3′	15.3′	11.5′	2.5′	14.0′

Then, a test to confirm or contradict the belief that a mixture of strychnine and brucine was more toxic than strychnine alone. We first ran preliminary tests with the two alkaloids separately, followed by an experiment with a 50–50 mixture of the separate alkaloids. This latter test being checked by a commercial 50–50 mix supplied us for study by one commercial manufacturer.

The strychnine alkaloid was different from our standard reference poison because we wished to use a strychnine made by the same firm as our brucine.

Strychnine.			Brucine.		
T/S.	T/T.	T/D.	T/S.	T/T.	T/D.
15.6′	3.7′	19.3′	No kills 50–150 mg./Kg.		

	Lab. 50–50 mix of the above alkaloids.			Commercial 50–50 mix.		
Dosage Range.	T/S.	T/T.	T/D.	T/S.	T/T.	T/D.
10–50 mg./Kg.	13.2′	4.5′	17.7′	10.9′	4.6′	15.5′
Total alkaloids	Survivors at 10–15 mg./Kg.			Survivors at 10 mg./Kg.		

In this test we failed to demonstrate any toxicity other than that carried in the strychnine. The obvious weakness of the brucine in the sample used was without doubt the reason for this.

In much of the laboratory work on rats, the tests were instituted to check observations previously made in the field by one of us, in work carried out with Zuni prairie dogs. Owing to the intensely practical phase of the outside work a fixed dose of 7 mg./Kg. was given to these small rodents by stomach tube, and the "reaction times" were recorded. From a list of approximately forty substances tested, we will select five to demonstrate the fact that the laboratory figures represent the way in which the results will show up under similar conditions in field testing.

Substance.	Ratio of Substance to Strychnine.	T/S.	T/D.
Strychnine alkaloid		31.5′	73.0′
Sodium azide	2 ×	8.4	20.3
Sodium nitrite	2 ×	19.5	39.5
Sodium thiosulfate	3 ×	30.0	59.5
Borax	1 ×	27.0	42.0 to ON

DISCUSSION.

In these tabulations it appears that we have shown a continued variation to be present in alkaloidal strychnine obtained from various manufacturers for use in economic poisoning.

It also appears that sodium azide exerts the most potent influence in speeding up the toxic action of strychnine, since the T/D dropped from 14.6 minutes to 6.1 minutes, when the azide was added to the suspension. Borax in quantities of from $^1/_2$ to 2 × slightly speeds strychnine action. Sodium thiosulfate resembles borax in action. Sodium bicarbonate in a quantity equal to that of strychnine gives a slight speeding of killing time. Tannic acid, ethyl alcohol and activated calcium seem to slow absorption, but do not detoxify the strychnine, so death even-

tually occurs. Magnesium chloride antagonizes strychnine in direct proportion to the concentration of the salt used, from the ratios $^1/_{10}$ to $^1/_2$ tested. Sodium chloride has an action dependent upon the concentration. There is apparently no consistency because $^1/_2$ and 5 × both slow the T/D, while 1 × and 2 × both speed the T/D. This is probably due to action on osmosis.

Powdered yellow dextrin had slight influence on strychnine action up to a ratio of 7.5 and 10.0 × the strychnine. At these figures there was a slight slowing of the strychnine speed of kill. In these tests brucine did not appear to exert a potentiating influence on strychnine, probably owing to a non-toxic brucine being involved.

CONCLUSIONS.

1. Strychnine alkaloids of apparently uniform chemical composition vary in their physiological activity.
2. Certain chemicals markedly influence the lethal rates of strychnine.
3. Sodium azide and sodium nitrite are most effective in speeding up the toxic action of strychnine.
4. Tannic acid, ethyl alcohol and activated calcium were the most effective in retarding the toxic action of strychnine.
5. Other substances tested were intermediate in their action, and did not greatly affect the toxicity of the poison.

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ASSAY OF FREE ACIDITY IN SHAVING CREAM.*

BY L. F. GABEL.[1]

The assay of free acidity or alkalinity in shaving cream is complicated by the fact that, in order to determine the reaction, it is necessary to use alcohol as a solvent.

Reaction in alcohol introduces a chemistry which differs from the reaction in water; this is particularly true of soap, due to the hydrolysis in water solution.

A series of assays was made in an attempt to note the reaction of soap by

(1) Colorimetric p_H
(2) Electrometric p_H
(3) Assay in 95% neutral alcohol
(4) Assay in small volume of water

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* Scientific Section, A. PH. A., Dallas meeting, 1936.

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The following conditions were maintained in shaving cream:

Numbered samples, as designated in the following tables, refer to the same lots of cream throughout. All samples were heated to boiling and titrated immediately. Reagents: Alcoholic solution of Brom Thymol Blue; Phenolphthalein; $N/20$ alcoholic Potassium Hydroxide; neutral alcohol. It is necessary to free the alcohol of carbon dioxide to obtain neutral alcohol. This requires continued heating on the steam-bath, covering the beaker containing the alcohol with a watch glass, or using a reflux arrangement.

TABLE I.—COMPARISON OF THE REACTION OF SOAP WITH COLORIMETRIC AND ELECTROMETRIC p_H DETERMINATIONS.

Samples. 2 Gm. of Soap in 50 Cc. of 95% Neutral Alcohol.	p_H. Hellige Comparator (1 Cc. Brom Thymol Blue).	p_H. Potentiometer Glass Electrode.
No. 1	6.5	7.9
2	6.5	7.9
3	6.6	8.6
4	6.7	8.4
5	6.4	8.3
6	6.7	8.5
7	6.3	7.9
8	6.2	7.9

The colorimetric results show an acid reaction; the electrometric readings indicate an alkaline reaction. The electrometric p_H can be disregarded, as the high percentage of potassium and sodium ions present in the soap solution does not permit a true determination of the p_H.

TABLE II.—COMPARISON OF COLORIMETRIC p_H WITH THE ASSAY OF THE SOAP.

Samples. 2 Gm. of Soap in 50 Cc. 95% Neutral Alcohol.	p_H. Hellige Comparator (1 Cc. Brom Thymol Blue).	Assay. Titration with $N/20$ Alc. KOH (1 Cc. Brom Thymol Blue) % Excess Stearic Acid.	p_H. After Neutralization.
No. 1	6.5	2.9	7.0
2	6.5	2.8	7.1
3	6.6	2.3	7.1
4	6.7	2.5	7.0
5	6.4	2.8	6.9
6	6.7	3.0	7.1
7	6.3	3.3	7.0
8	6.2	3.1	7.0

The above results show a similarity of the p_H by colorimetric method and per cent excess stearic acid by neutralization with $N/20$ alcoholic KOH.

TABLE III.—COMPARISON OF THE REACTION OF SHAVING CREAM, USING BROM THYMOL BLUE INDICATOR AND PHENOLPHTHALEIN T.S.

Samples. 2 Gm. of Soap in 50 Cc. 95% Neutral Alcohol.	Assay. Titration with $N/20$ Alc. KOH (1 Cc. Brom Thymol Blue) % Excess Stearic Acid.	Assay. Titration with $N/20$ Alc. KOH (0.6 Cc. Phenolphthalein T.S.) % Excess Stearic Acid.
No. 1	2.9	3.3
2	2.8	3.0
3	2.3	2.8
4	2.5	2.3
5	2.8	3.5
6	3.0	3.2
7	3.3	3.4
8	3.1	3.5

The per cent of excess stearic acid in Shaving Cream, as determined by the phenolphthalein end-point, averages 0.2% higher than with Brom Thymol Blue. Higher results would be expected with phenolphthalein, as the color of this indicator does not appear until a p_H of 8.0 is reached.

The following results show the reaction of soap in a small volume of water:

TABLE IV.

Samples. 2 Gm. of Soap in 2 Cc. Water (Heated to Boiling).	Assay with $N/20$ Alc. KOH (1/2 Cc. Brom Thymol Blue) % Excess Stearic Acid.	Assay with $N/20$ Alc. KOH (1/2 Cc. Phenolphthalein T.S.) % Excess Stearic Acid.
No. 1	3.4	3.3
2	3.0	3.2
3	3.0	3.0
4	2.8	2.8
5	3.1	3.2
6	2.9	3.2
7	3.3	3.4
8	3.7	3.6

Upon adding phenolphthalein to a mixture of 2 Gm. of soap and 2 cc. water before heating, a decided alkaline reaction indicates the extent of the hydrolysis of the soap. After heating until solution takes place, the reaction is acid, requiring approximately 6 cc. of $N/20$ alc. KOH to neutralize.

The above experiment shows the necessity of maintaining a hot solution throughout the assay.

CONCLUSIONS.

A series of assays for determination of free acidity in Shaving Cream was made with the object of checking the method generally used, as well as attempting to find a more accurate procedure.

Results obtained with Brom Thymol Blue used as indicator averaged approximately 0.2% lower acidity than the phenolphthalein end-point.

As the red color of phenolphthalein in the presence of an alkali does not appear until a p_H of 8.0 is reached, it is reasonable to assume that results with Brom Thymol Blue are more accurate.

Detection of the neutralization point was more readily observed with Brom Thymol Blue than with phenolphthalein indicator.

It would be highly desirable if a definite procedure was established for the assay of the reaction of soap.

The factors to be considered are: Amount of sample; volume of solution; use of neutral alcohol, free from carbon dioxide; temperature of solution during the assay; indicator.

The *Indian and Eastern Druggist* states that immense quantities of licorice are grown on the banks of the Tigris from Mosul to Kut, and on the Euphrates from Meskene (opposite Aleppo) to Diwaniyah. Exports have reached 6000 or 7000 tons per annum. The root is dug in the winter months, dried and sent down to Basrah to be baled. Before the war the annual exports of gum were some 6000 cases, the most valuable are the gum tragacanths, which are produced by tapping small shrubs which grow all over the mountains of Southern Persia, and in Iraq in the regions of the north and north-east frontiers. Mosul and Sulaimaniyak are the principal collecting areas. The gum is brought to Baghdad, where it is sorted and packed for export. Another kind of gum is produced from a large tree (known as Button by the Arabs) which grows on the borders of Kurdistan. The tree produces edible fruits from which oil is extracted in Mosul and Baghdad. This gum is known as "Elch," and is principally sent by caravan to Aleppo, where it is used for sizing cloth.

RED SQUILL V. THE SUSCEPTIBILITY OF HOGS TO RED SQUILL.*

BY JUSTUS C. WARD,[1] CLIFFORD W. BARBER,[2] F. E. GARLOUGH,[3] JAMES C. MUNCH.[4]

For some years past, the Control Methods Research Laboratory of the United States Biological Survey has occasionally received reports of animal losses presumably caused by the consumption of red squill baits exposed for rat control. References in the literature (1), (2), (3) indicate that red squill is not readily taken by animals, other than rats, and if consumed the emetic principle in the squill causes vomiting, which usually saves the animal.

The literature, however, is deficient in specific references to the toxicity of red squill powders and extracts to hogs (4). The observations we are reporting will deal with this particular point.

Our early tests were carried on with one hog which had been maintained in the laboratory on an adequate diet. The results of these studies confirmed published observations in that the animal took more than three hours to eat two pounds of bait. It consumed the entire bait, however, before stopping, and in that form had obtained a dose of 1888 mg. of red squill powder per Kg. of hog. The hog showed marked depression for five hours, but did not vomit during that time. The following morning, however, evidence was present to show vomiting had been profuse during the night. The hog was still very sick, and remained so for four days. Recovery was complete, however, and the appetite was restored on the fifth day.

Further reports of suspected losses of hogs caused a renewal of our interest in this matter, and coöperative studies were undertaken with Dr. I. E. Newsom and his associates in the Department of Veterinary Pathology, Colorado State College at Fort Collins, to learn more of the possible hazards of red squill to hogs.

The animals used were purchased on the Denver market and trucked to Fort Collins for penning and observation. After they had been proved to be normal they were starved for from 24 to 72 hours to attempt a stimulation of acceptance. This treatment was without avail in every case, since it was necesssary to force feed all the animals tested. The following table gives the results of the dosages administered:

TABLE I.—THE EFFECT OF RED SQUILL POWDER ON HOGS.

Animal No.	Animal Weight Kg.	Dose Mg./Kg.	Result.
4	39.55	1,500	Found dead 2½ hours
3	46.40	750	Found dead 2½ hours
2	52.30	500	Died 4½ hours
1	53.20	250	Died 7 hours
6	50.90	175	Died 5 hours
5	65.50	100	Survived

* Scientific Section, A. PH. A., Dallas meeting, 1936.

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[4] Senior Pharmacologist, Control Methods Research Laboratory, U. S. Biological Survey.

Animals 1 to 4, inclusive, were starved 24 hours, while animals 5 and 6 were held without food for 48 hours. It seemed to make very little difference in the acceptance rate, only small quantities of bait being taken before complete refusal was observed. A period of an hour and a half was allowed to elapse before force feeding was instituted, but when no further inclination to eat naturally was in evidence, the animals were stomach-tubed.

This method of dosage caused sufficient irritation that emesis was induced in all animals very promptly. Animal No. 1 started vomiting in 8 minutes; No. 2 in 3 minutes; No. 3 in 5 minutes; No. 4 in 4 minutes; No. 5 in 13 minutes; and No. 6 probably within an hour although an exact observation was not obtained. Vomiting was profuse and repeated, but did not save the animals involved. This was undoubtedly due to the fact that considerable of the bait had passed into the intestines.

To test the effect of extracting the rat-killing fraction from the squill powder and feeding only that portion to hogs, two additional animals were used.

An extract was made from the powder used in the experiment above, by the use of an alcohol, glycerine and water-combined menstruum. This menstruum was concentrated in vacuum to 40% fluidextract strength. This was then mixed with a scratch feed in equal proportion, giving a bait carrying the equivalent of 200 mg. of dry squill powder per Gm. Weighed quantities were offered to hogs, but only samples were taken. Boluses were then made and placed on the back of the tongue and washed down with water.

These animals did not vomit while being watched for over an hour.

TABLE II.—THE EFFECT OF RED SQUILL EXTRACT IN HOGS.

Animal No.	Animal Weight. Kg.	Dose. Mg./Kg.	Result.
8	35.90	500	Died in 2 days.
7	48.20	250	Survived.

The symptoms of red squill poisoning are well illustrated by a discussion of the history of animal No. 1, which died in seven hours from a dose of 250 mg./Kg. This hog was given its poison by stomach tube at 10:37 A.M. It began vomiting at 10:45 A.M. Following that, until 1:45 P.M. when it bedded down, it remained quiet but tense in a standing position. During the period following 1:45 P.M. it ground its teeth violently, showed an increased respiration and frequently gave a mild expiratory grunting. At 2:45 P.M. the animal began a rolling about the longitudinal axis, rolling to the left. Then a posterior paralysis developed, which gradually proceeded toward the anterior portion of the animal.

Frequent defecation of normal feces occurred every few minutes during the afternoon from 1:45 until 3:00 P.M. The passages became watery and stringy after this time and persisted until almost death.

Signs of respiratory failure started at 5:15 P.M., and the hog died at 6:00 o'clock. It was autopsied at 10:00 P.M.

The post-mortem appearances of the hogs all closely resembled that of number one, so a description of this same animal will be sufficient.

There were no external lesions.

Cerebral vessels were distended with dark-colored blood. Parotid lymph nodes slightly reddened. Lungs light colored and emphysematous. Heart showed diffuse hemorrhage near the coronary vessels on each ventricle.

The oral cavity, trachea and esophagus were all normal.

Strands of fibrinous exudate were prominent in the serosa of the intestines. Numerous 0.1–0.5 cm. hemorrhages were present in serosa of small intestines.

Stomach was nearly empty. The mucosa was covered by a thick, grey, tenacious exudate. Diffuse hemorrhagic inflammation was present throughout the intestinal tract, most pronounced anteriorly. Mesenteric lymph nodes were very hemorrhagic. The dark kidney surface was irregularly mottled with white spots. The other organs were apparently normal.

The pathology followed the indications seen in the post-mortem, in that practically all the sections showed only congestion.

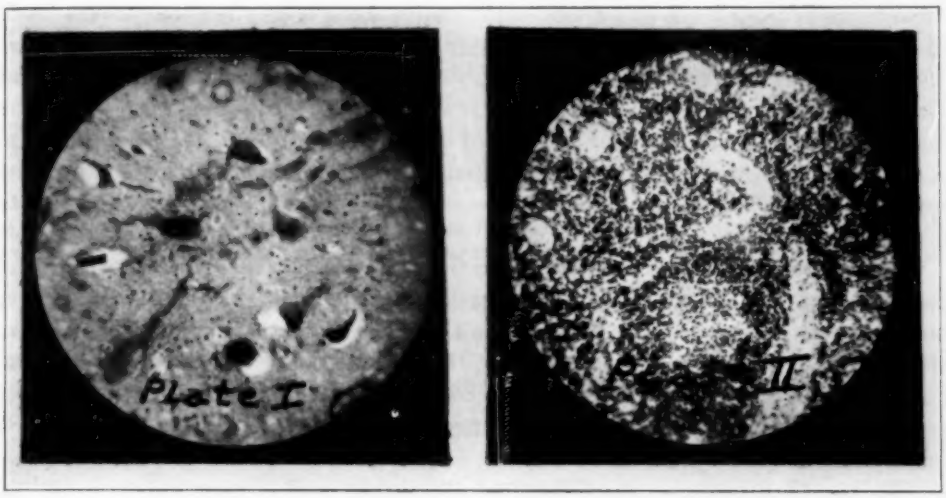

Plate 1. Plate 2.

Plate No. 1 shows the congested capillaries in the grey matter of the central thoracic portion of the spinal cord of animal number one.

Plate No. 2 indicates the extreme congestion in the parotid lymph node, shown by capillary wall distension, in animal number six.

CONCLUSIONS.

1. Red Squill powder is lethal to hogs when given by stomach tube in doses of 175 mg./Kg. and above.
2. Red Squill extract is lethal to hogs when given by stomach in doses of 500 mg./Kg.
3. Most hogs will not eat enough red squill rat poison voluntarily to cause death.
4. Red Squill powder causes emesis in hogs, which tends to protect the animals, when baits are consumed normally.

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PURE FOOD AND DRUG LEGISLATION STARTED IN THE UNITED STATES ONE HUNDRED YEARS AGO.*

EARLY EFFORTS MADE IN ENGLAND, TO CONTROL THE PURITY OF FOODS AND DRUGS, BY SEPARATE MEASURES.

BY LYMAN F. KEBLER.[1]

Food and drug legislation means legislation that simultaneously covers in the same measure both foods and drugs. It does not mean legislation that covers foods in general, or a special food, such as the chocolate branding law of Massachusetts, 1803, or the adulteration of liquors with drugs in Illinois, in 1845, or the Federal Drug Import Law, of 1848. It does have a semblance to our import tariff laws, that include both foods and drugs and a host of other commodities. The prime purpose of such laws is revenue, but purity is often an important factor. For example as early as 1790, different rates of duty were imposed on sugar, depending on its degree of refinement.

The general view prevails that the United States and the several states in the union, followed in the footsteps of England in the matter of pure foods and drugs; but this view is erroneous. As early as the 13th century, England, by statute, endeavored to protect its citizens against the dishonest dealings of bakers, brewers, butchers, vintners and others. This is considered the first public act, directing attention to food adulteration and its control. It seems to have been well enforced for several centuries.

In the 16th century the College of Physicians was empowered to examine, govern, correct and punish all physicians, apothecaries, druggists, distillers and manufacturers of medicinal chemicals, for indiscretions. The College of Physicians, in the 17th century, published the first pharmacopœia of England, which provided some drug standards for physicians, apothecaries and others. In the 18th century, the Apothecarie's Company was empowered to visit apothecary shops in London and destroy such drugs as were found unfit for use.

The above gives a good idea as to the methods employed in England for regulating dishonesty in merchandising foods and drugs, over a period of several centuries. What may be considered the modern movement for controlling these unfair practices in England started with the law of 1860, regulating the sale of adulterated articles of food and drink. This followed in the wake of hearings of a Select Committee of Parliament, during which the wholesale adulterations found by the intrepid Dr. A. H. Hassall, played a prominent part. This act was amended in 1868 to include medicines. This is considered the first statute of England that covers both foods and drugs.

EARLY FOOD AND DRUG LAWS IN THE UNITED STATES.

Problems arise in the individual states that require special attention by such states. Some states, as a natural course of events, had a longer experience in self government and protection than others. Some states profited by the experience

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of their sister states. Individual initiative is often a potent factor. Progressive thinkers and actors, in some states, wielded a greater influence than others and such states naturally forged ahead more rapidly in various lines. On the above basis one would naturally conclude that the states which took part in the Revolution, would be in the forefront, in the matter of health protection. This is in a measure correct, but other states soon came into line.

MASSACHUSETTS AND MICHIGAN IN THE LEAD.

Massachusetts in 1835, Revised Statutes, page 742 (1836), under the heading "Offenses against the Public Health," passed the following law:

"Section 1. If any person shall knowingly sell any kind of diseased meat, corrupted or unwholesome provisions, whether for meat or drink, without making the same known to the buyer, he shall be punished by imprisonment in the county jail, not more than six months, or by fine not exceeding two hundred dollars.

"Section 2. If any person shall fraudulently adulterate, for the purpose of sale, any substance intended for food, or any wine, spirits, or malt liquor or other liquor, intended for drinking, with any substance injurious to health, he shall be punished by imprisonment in the county jail, not more than one year, or by fine not exceeding three hundred dollars, and the articles so adulterated shall be forfeited and destroyed.

"Section 3. If any person shall fraudulently adulterate, for the purpose of sale, any drug or medicine, in such manner as to render the same injurious to health, he shall be punished by imprisonment in the county jail, not more than one year, or by fine not exceeding four hundred dollars, and such adulterated drugs and medicines shall be forfeited and destroyed."

The first section contains the "Knowing" element and Sections two and three penalizes only adulterations injurious to health. Frauds on the purse have a free hand.

Michigan in 1838, Rev. Stat., page 649, enacted the same law as that of Massachusetts, under the same heading. No special provisions seem to have been made in either state for the enforcement of the above law, and little appears of record as to its early enforcement.

THE HAWAIIAN FOOD AND DRUG LAW, PENAL CODE, PAGE 52 (1850), INCLUDES THE PHRASE "FOR MEN OR ANIMALS."

The Hawaiian Islands were not a part of the United States, when this law was passed, but because of the inclusion of the phrase, "Men and Animals," and the fact that Americans at the time, virtually controlled the essential operations of the Hawaiian government, and the fact that the Island Kingdom later became a part of the United States, it is included herewith. Strange as it may seem, the little Kingdom of Hawaii, seems to be the first to embody in food and drug legislation, the idea of covering both man and other animals. The Sandwich Island legislators classed as malicious injuries, with suitable punishment:

The poisoning, spoiling or mixing any deleterious, offensive or injurious fluid or substance, with water, or any fluid or substance used as a beverage, food or medicine for men or animals.

OTHER STATES AT IRREGULAR INTERVALS EARLY ENACTED FOOD AND DRUG LAWS.

Rhode Island, Revised Statutes, page 546 (1857), "Every person who shall be convicted of knowingly selling, etc."

The remainder of the enactment is similar to the Massachusetts law.

Tennessee, Code, page 865 (1858). The food portion is similar to Massachusetts. In the case of drugs the act reads: "It shall be a misdemeanor—For any person to adulterate for the purpose of sale, any drug or medicine, in such manner as to lessen its efficiency or change the operation of such drug or medicine, or make them injurious to health, or sell them knowing that they are adulterated;—."

This act strikes at not only the adulterations of drugs and medicines, that are injurious to health, but also at adulterations that lessen their efficiency or change their operation, which certainly are unique features.

Wisconsin, Revised Statutes, page 976 (1858). Same as Massachusetts.

Pennsylvania Laws, page 401 (1860). The law in this state is more compact than others heretofore considered, but aims to accomplish the same purpose. It reads:

"If any person shall sell or expose for sale the flesh of any diseased animal—knowing the same to be such or shall adulterate for the purpose of sale any article of food, or wine, or shall sell, knowing the same to be adulterated, any drugs or medicines, such person shall be guilty of a misdemeanor and upon conviction be sentenced to pay a fine not exceeding one hundred dollars or undergo imprisonment not exceeding six months or both or either at the discretion of the court."

California, Statute, page 186 (1860): This is not strictly a food and drug act, but it does touch on several food and drug features, embodies some new elements, and was enacted the same year as the English law, regulating the sale of Food and Drink. For the above reasons it is considered here. The law prohibits the incorporating or intermixing of any drug or poisonous compound or anything deleterious to health, with any alcoholic or spirituous liquor, wine or cider, or any liquid used as a beverage, or selling any such adulterated products, knowing the same to be so adulterated. Such adulterated articles, not exceeding one gallon may be seized, upon affidavit, made before a justice of the peace, for the purpose of having the same tested, by a competent chemist, whose testimony shall be received in any case arising therewith.

"Nothing contained in this act shall apply to the compounding of drugs with alcoholic or spirituous liquors or wines by any regularly educated physician or druggist, when the same is done for medicinal purposes;—but such compounding shall not be for use as a common beverage."

This act contains the two following stringent features:

Any person convicted under this act shall never again be granted a license, to carry on a business of food and drinks. Every person convicted, in case of default of paying the judgment and costs, shall be imprisoned at the rate of one day for each two dollars of the judgment and costs, not exceeding six months, however.

California, Statute, page 484 (1862). This law requires foods and drinks, adulterated with poisonous substances, to bear on each package the word "Adulterated," printed in plain English. It also requires that in case such an article is sold to be consumed at the time of sale, the adulteration label must be shown to the consumer.

Oregon, General Laws, page 572 (1864), is similar to Massachusetts, but minimum penalties are fixed, not less than three months or not less than fifty nor more than five hundred dollars.

New York, Penal Code, page 169 (1865).

"Every person who adulterates or dilutes any article of food, drink, drug, medicine, strong,

spirituous or malt liquor, or wine, or any article useful in compounding any of them, whether useful for mankind or animals, with fraudulent intent to offer the same—for sale, knowing the same to be adulterated or diluted is guilty of a misdemeanor.

"The selling or disposing of any tainted food, drink, drug or medicine knowingly, to be eaten or drank by any person or animal, is guilty—."

All of the above state laws came into existence before the 1868 food and drug statute of England became operative. Other states enacted similar laws in due time. Kansas, General Statutes, page 377 (1868), enacted the same measure as Massachusetts, except the penalties. California, Penal Code, page 86 (1871), followed the New York Code, in a large measure. Illinois, Revised Statutes, page 353 (1874), enacted a lengthy measure. It is divided into four subdivisions, under the heading "Adulteration" as follows—"Of food, candies etc., of liquor, of milk, of medicine." The fundamentals of this measure are similar to those heretofore considered. The full penalties are rather severe, being confinement "in county jail not exceeding one year or fined not exceeding one thousand dollars, or both in the discretion of the court."

THE CHALLENGE OF TO-DAY.

BY ANTON HOGSTAD, JR.

An address presented before the Section on Practical Pharmacy and Dispensing—1936 Convention of the AMERICAN PHARMACEUTICAL ASSOCIATION, Dallas, Texas.

There are many interesting and significant developments taking place in American Pharmacy at the present time. When referring to American Pharmacy, I likewise include our neighbor north of the unguarded border, for the problems of the Canadian pharmacist are quite similar to the problems of the pharmacist in these United States, especially in such metropolitan centers as Toronto and Montreal. This is only natural for one notes the methods of the Yankee making definite inroads in various sections of Canada.

It is a difficult matter to properly define in one's mind Pharmacy as it will be practiced in the to-morrow. What will be the picture of the professional Pharmacy of to-morrow? Will that status obtain at some time in the not too far distant future when there will result a well-defined line of demarcation between the professional aspects of pharmacy and drug and sundry merchandising? What is to be the nature of the daily activities of the professional pharmacist from the viewpoint of serving as colleagues to members of allied professions in the fullest sense of the word? Then there is the question of Public Health. To date the rôle of Public Health has never been defined in relation to professional pharmacy, which serves the community in the rôle of a Public Health Institution.

It is a well-recognized fact that there has resulted a distinct awakening on the part of retail pharmacists during the past few years, wherein one notes that these individuals are no longer content to follow the mirage of false profits in an over-exploited field of commercialism. The handwriting on the wall indicates that many retail pharmacists are returning to the tenets and precepts of the profession of pharmacy; men and women who are becoming convinced of the fact that the professional field seemingly offers the only tangible means of escape from their present predicament.

In a critical analysis of the situation it is quite apparent that the lack of a comprehensive training in pharmacy is, of course, partly responsible for the present picture of the typical drug store of this country. The picture that we gaze upon to-day, in relation to the average drug store, must necessarily represent a concrete expression of the interpretation that many men and women possessed of a retail pharmacy, and the rôle that it should occupy in the respective community. Competitive measures have, of course, materially influenced one's thoughts in this connection.

ONE CANNOT MERCHANDISE A PROFESSION.

An evaluation of the facts of the case brings to light that possibly the greatest mistake we have made as pharmacists is that we have in the past been attempting to merchandise a profession, and in so doing, little realized that one cannot merchandise a profession, and that any attempt to do so will in part destroy the profession in question. What if the physician and the dentist attempted to merchandise their respective professions? One has noted attempts from time to time in this direction, but that a halt has been called by the respective profession and a cessation of these activities brought into being. The Dental Profession has been very active in this connection during the course of the past few years and has accomplished a great deal in eliminating certain objectionable features that did not reflect credit on the Dental Profession.

PEOPLE LIKE TO TAKE MEDICINE.

Pharmacists are not alone in making mistakes. The Medical Profession has likewise made a serious mistake, in that the physician has, apparently, overlooked the fact that people like to take medicine, and that the successful practicing physician is the one who prescribes. What of the thoughts of the lay person when the physician advises him that there is nothing especially wrong, and advises him to go to the drug store for a hot water bottle, and we will say, a few Aspirin tablets? Such a patient, no doubt, is of the opinion that he knew that much before consulting the physician. There is something about the make-up of the average human being that is instinctively looking forward to receiving one or more prescriptions from the physician, and is much more pleased with a medical service when prescribing is a part of the physician's daily routine.

A PROFESSIONAL DEGREE.

To bring about a change in an old-established order is no easy task, for human prejudices are deep-rooted. There needs to be much more on the part of the pharmacist than merely a change of heart (perhaps as a result of financial conditions), as well as a few hundred dollars to open a professional pharmacy. It has been said that there is no royal road to learning. Likewise, there is no royal road toward that goal, which when achieved, will assure one a lasting measure of success and personal satisfaction as a pharmacist.

Pharmaceutical education is the corner-stone of the entire structure. Great advances have been made and further progress is now in the making relative to higher standards in pharmaceutical education. The increase from two to three years was a notable advance, which in turn has been followed by the advance from three to four years. There is, however, much more to be done if we are to reconstruct a new order that will be commensurate with the professions of Medicine and Dentistry. Personally, I sincerely trust that the day is not far distant when our Colleges of Pharmacy will require six years of instruction before the student is allowed to appear before the Board of Pharmacy, and who will have earned a professional degree, namely, Phar.D., thus putting the degree in Pharmacy on a basis equal in every respect to the M.D. degree in Medicine and the D.D.S. degree in Dentistry. Objections will necessarily be registered in opposition to this advance, but let it always be borne in mind that Pharmacy is one of the recognized professions dealing with the question of Public Health. I am appreciative of the fact that there are many factors to be considered and that this desirable change cannot be brought into being over night, but if we are to meet the Challenge of To-day, we should put our house in order day by day, so that when the time arrives when the one professional degree is feasible, that we will have by that time jumped many of the hurdles that are now on our pathway toward that desired goal.

This does not mean that Colleges of Pharmacy should not award scientific degrees. If the student desires to pursue some particular field of Science, scientific degrees should be given for such endeavors, which would not detract, but would enhance the value of the professional degree.

NOMENCLATURE.

In the building of the new order from the ashes of chaos in the over-exploited field of commercialism, some attention should be devoted to the subject of nomenclature. There are many expressions on our part which are sadly in need of revision. In this connection, I desire at this time to call attention to a few of the thoughts that have come to mind as follows:

(*a*) *So-called Commercial Pharmacy.*—I am of the opinion that the title "Commercial Pharmacy" should be changed to read "Drug and Sundry Merchandising" or some other appropriate title. As mentioned previously, it is impossible to merchandise a profession without resulting in a partial destruction of the profession in question. The title "Commercial Pharmacy" infers a merchandising of a profession and which reflects to the discredit of the profession. This title is still being retained in a number of catalogs of our Colleges of Pharmacy. These catalogs reach other hands than prospective pharmacy students. They are to be found in the archives of various types of libraries and other places which are more or less affiliated with pharmacy as a profession.

(*b*) *Pharmacy vs. Professional Pharmacy.*—It is regretted that we speak of professional Pharmacy when referring to the activities on the part of the pharmacist who adheres to the tenets and precepts of his profession, in contrast to the activities of that pharmacist who devotes the major portion of his time to the sale of drug and sundry merchandising. Why the qualifying adjective "professional?" Pharmacy as a profession is professional. Does one hear the physician referring to so-called "Professional Medicine" or the dentist to "Professional Dentistry?"

I appreciate the difficulties involved and I likewise speak in terms of professional pharmacy for means of convenience. Perhaps the usage has been continued to such an extent that it is too late to correct it. The thought has occurred to me that perhaps there is some other word or words which would aptly express the thought implied by the title, "Professional Pharmacy."

(*c*) *Prescription Business vs. Prescription Practice.*—As a rule the retail pharmacist speaks in terms of his prescription business when referring to the volume of prescriptions that he has compounded. This again speaks of commercialism and reacts to the detriment of the profession. Would it not be better to refer to this phase of the activity on the part of the pharmacist by the title, "Prescription Practice?" The physician refers to his activity by the title, "Medical Practice" and the dentist by the title, "Dental Practice." It would appear that "Pharmaceutical Practice" is to be desired over that of "Prescription Practice," for the daily activities of the so-called professional pharmacist involves much more than the compounding of prescriptions. From time to time, I have referred to this subject by the title, "Prescription Patronage" until my attention was called that the word "Patronage" is a favorite term of the politician.

(*d*) *Prescription Laboratory vs. Prescription Department.*—The employment of the title "Prescription Department" implies that it is just another department; personally, I prefer the title "Prescription Laboratory." This title is not altogether satisfactory, for the word laboratory is closely associated with science laboratories. In some ways I like the manner by which the Canadians designate this section of the Pharmacy, namely, "the Dispensary."

(*e*) *Doctor and Dentist.*—Frequently I have heard pharmacists make mention of the Doctor and the Dentist when referring to a member of the medical and dental professions, respectively; the dentist is likewise a doctor—Doctor of Dental Surgery with the professional degree D.D.S. We should refer to the medically trained person as the Physician and the dentally trained person as the Dentist.

(*f*) *Detailing the Doctor.*—This expression on our part is likewise faulty. I fail to appreciate that a professionally trained person details another professionally trained person. When I, as a pharmacist, seek to render my colleagues a distinctive type of professional service, which should be the part played by all pharmacists, I am not detailing my colleague, and with that thought in mind means that I am admitting defeat in part before I begin, for the reason that many detail men are nothing more nor less than sample distributers.

As a detail man I necessarily place myself in the class of detail men—good, bad and indifferent. Personally, I like to be considered in the light of a personal representative from a professional institution—the colleague of allied professions, and to merit this confidence on the part of my colleagues, it becomes necessary for me to render a distinctive type of professional service. In other words, to engage in a program which I choose to call "Service Re-Defined."

(g) *Service vs. Service Re-Defined.*—One reads and hears a great deal about so-called Service. The term is widely and indiscriminately used and to-day does not carry much weight or significance. Let us evaluate the word "Service" from a critical point of view. Those things generally embraced under the heading of Service are at least expected of us for which we receive financial remuneration. Can one call such procedures, then, by the title of Service? To me, true service begins where all such procedures end. True service begins when I go forth as a duly qualified pharmacist to ascertain how I, as a pharmacist, can render my colleagues a distinctive type of service. I have found in the past that the dermatologist requires a type of service quite different in character than does the allergist, and vice versa. This applies equally well to all branches of medical science, including dentistry. In order to render this type of service, necessarily means that I must be a well-trained individual and that I have made *commencement time* as indicated, time to commence my professional life, rather than to look upon it as *graduation time*, or that period when I throw the books in the corner, to look forward to passing the State Board and to become a proprietor in my own right. It means that I must necessarily have a well-rounded library at my command.

The measure of support and coöperation that I receive on the part of members of allied professions should represent a by-product of my activities, rather than to seek it in a direct manner by merely offering a generalized type of service.

PHARMACY AND PUBLIC HEALTH.

One of the many issues confronting us in the Challenge of To-day is one that concerns itself with the question of the retail pharmacy as a Public Health Institution. I refer to the matter of pharmaceutical technique as practiced by the retail pharmacist in the compounding of prescriptions. An evaluation of our present-day procedures reveals that many of our present-day procedures will necessarily have to be modified.

Let us take for example the procedure of filling capsules. Manufacturers of gelatin capsules advertise the fact that capsules of their manufacture are untouched by human hands. From a physicochemical point of view, we know that gelatin as a substance, is one that possesses a marked degree of absorption and adsorption.

What of our procedures as pharmacists? We may or may not wash our hands before entering upon the task of filling, we will say, of one dozen capsules. In the average type of store where the pharmacist must attend to the varied duties "out front" it may be that three or four capsules have been filled and then some other duty necessitates calling a halt for the time being, to attend to a sale of drug or sundry merchandise. In that interim the pharmacist may or may not shake hands, the chances are that he will handle money in a soiled condition. Likewise, his fingers are placed in compartments of the cash register drawer which are far from that desired from a public health and cleanliness point of view. The pharmacist then returns to the prescription laboratory after the sale has been completed, and again enters upon the task of filling the remaining number of capsules, again he may or may not wash his hands.

The capsules have been grasped between the thumb and the index finger and some pressure brought to bear in order to have the prescribed medicaments enter the capsules. It is very possible, that one does not question the fact that there has resulted either an absorption or adsorption of perspiration, so-called dirt, including bacterial organisms, etc. We, as pharmacists, know that capsules are to be taken by mouth. Can one call it a Public Health procedure on our part to engage in a procedure of this type? To-day a number of retail pharmacists are either employing capsule-filling machines or employing clean, and in some cases, sterile thin latex gloves in order to remedy the situation.

Towels.—There has been laxness relative to the utilization of a goodly supply of towels in the prescription laboratory. Such a condition is far from being classed as isolated cases and merits serious consideration.

My barber employs two clean towels in connection with a shave for which he receives twenty-five cents. It must be borne in mind that the barber applies towels to my face—an external application; we, as pharmacists, fill capsules and engage in other pharmaceutical procedures, knowing that the medication is to be taken by mouth.

Ointments.—Many ointments as compounded by pharmacists are placed in ointment jars.

What of the procedure on the part of the laity in regard to the application of the prescribed form of medication when placed in an ointment jar? The usual procedure for the lay person is to remove some of the ointment by means of the index finger and then apply said portion of ointment to the affected area by means of the index finger. A second portion may be considered necessary. The patient then returns the index finger to the ointment jar—the finger that has come in contact with the affected area and proceeds to remove the second amount. Can one call such a procedure a Public Health measure? To-day many pharmacists are placing as many ointments as possible in collapsible tubes, so as to overcome this difficulty. Others are stressing the need of application by means of tongue depressors and cautioning the patient about returning some of the infected ointment to the jar.

Nasal Preparations.—Our present procedure of placing nasal medication in dropper bottles is likewise faulty. The procedure on the part of the average person is to place the tip of the dropper in one or both nostrils, permitting the dropper to come in contact with the infected mucous membranes, after which the dropper is returned to the remainder of the nasal preparation in the bottle. Such a procedure is, of course, far from desirable when considered from a Public Health point of view. A pharmacist in the New England States has overcome this difficulty by placing the medication in a low-priced atomizer bottle. The price of the bottle and atomizer is within reach of the average pocketbook when used in connection with a prescription calling for a nasal preparation.

Thus it will be seen that we should set about to engage in a critical study of our present-day procedures, so as to bring about a desired modification in relation to Public Health measures. Other examples could be cited, but those mentioned suffice to show that this matter deserves attention on our part.

THE RETAIL PHARMACY AS A PUBLIC HEALTH INSTITUTION.

In what I have so far stated, mention has been made on several occasions calling attention to the relationship of a retail pharmacy to the subject of Public Health. It is a difficult matter to properly interpret a retail pharmacy as to its rôle in relation to the question of Public Health; no doubt, due to the fact that the writer, like all other persons, suffers from a certain amount of commercial astigmatism. It is difficult to block from view the picture of the average type of retail drug store and visualize in one's mind the retail pharmacy of To-morrow—in which Public Health measures are adopted and wherein the institution is essentially a Public Health institution.

The well-known "Charter's Report" calls attention to the fact, that the retail pharmacy is the best means of disseminating Public Health information. This Report makes mention that the average lay person visits a retail pharmacy many more times than such a person consults a physician. Herein lies a challenge of first order. What should be done and how should it be done? What is the best measure of approach? Should it be a governmental activity as such, or should it be a governmental activity working through the AMERICAN PHARMACEUTICAL ASSOCIATION? I favor the latter procedure. The governmental files are filled with much valuable information relative to Public Health that should be disseminated to the public and which, no doubt, can be best distributed through the agency of retail pharmacies.

PROFESSIONAL PHARMACY JOURNAL.

Some progress has been made by the officers of the AMERICAN PHARMACEUTICAL ASSOCIATION relative to a second journal to be published by said organization. I sincerely trust that the present JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION will be retained in its present form. It is occupying an important rôle and is serving a definite niche. Pharmacy as a profession is gaged by many according to the high standard of this JOURNAL as now edited.

There is a need, as appreciated by many, for another journal—a journal devoted to the needs of the practicing professional pharmacist. Such a journal need in no manner whatsoever compete with other journals of a similar character. The subject of so-called professional pharmacy is a comprehensive subject, which is being continually modified by modern advances in many fields of endeavor. It is to be hoped that a professional journal under the sponsorship of the AMERICAN PHARMACEUTICAL ASSOCIATION will soon make its debut.

THE AMERICAN PHARMACEUTICAL ASSOCIATION AND THE PROFESSIONAL PHARMACIST.

I feel that I am "not talking out of school" nor committing a breach of professional etiquette in referring to the AMERICAN PHARMACEUTICAL ASSOCIATION and its relationship to the practicing professional pharmacist. I feel that we are all more or less willing to admit that the ASSOCIATION should strengthen its relationship with the professional pharmacist.

Many pharmacists are prone to feel that the AMERICAN PHARMACEUTICAL ASSOCIATION is an association of pharmaceutical educators and that the activities of the ASSOCIATION are somewhat removed from the daily problems confronting the practicing pharmacist. Such individuals are not aware of the many activities engaged in by the AMERICAN PHARMACEUTICAL ASSOCIATION, which have more or less remained in the background, but which are essential to the welfare of the pharmacist. There, for example, is the work associated with the U. S. P. and N. F., the relationship of the ASSOCIATION to the medical corps of the U. S. Army and Navy, relationship of the ASSOCIATION with the Bureau of Standards and other governmental bureaus, etc.

It is my opinion that these activities should be brought to the attention of the retail pharmacist in a concise and concrete manner. That is but one part of the problems confronting the AMERICAN PHARMACEUTICAL ASSOCIATION.

We now have that imposing structure—the AMERICAN INSTITUTE OF PHARMACY, one of the most beautiful structures in the City of Washington. Let us see to it that through the Council on Pharmaceutical Practices, or a modification of same, that the AMERICAN PHARMACEUTICAL ASSOCIATION enlists the support of pharmacists in this country concerned with the many problems confronting such individuals.

SUGGESTED STUDIES FOR THE FUTURE.

During the course of the past decade or so thousands of dollars have been expended in relation to the problems confronting the pharmacist from a commercial point of view. I need only call your attention to the sums of money expended on behalf of the Capper-Kelly Bill, the Code, Drug Institute, Patman-Robinson Bill, Tydings Bill, etc. I am not decrying the merit relative to the expenditure of this money in this direction, but desire to call your attention that other problems are likewise before us.

Among these problems is one related to that field of endeavor wherein we would engage in a comprehensive study as to the "Gold Nuggets in Our Own Backyard;" in other words, what can the pharmacist do other than engage in building up a pharmaceutical practice? A cursory examination of varied activities in which a professional pharmacist could engage reveals that many gold nuggets remain obscured from view because of commercial viewpoint.

Another problem concerns itself with the thought of how the pharmacist can be of service to members of allied professions. For the most part, the average pharmacist announces to members of allied professions that he or she will gladly be of service but does not set before such individuals in a concrete manner just how they can be of service. When speaking of "Service" I do not have in mind those things generally embraced under that heading, for in my opinion, those procedures do not constitute service; they are at least expected of us and for which we receive monetary recompense.

Service, as I see it, begins where such procedures leave off; service begins where I, as a pharmacist, go to the allergist, the dermatologist, the gynecologist, the dentist, the veterinarian and other members of allied professions to become acquainted with their particular types of problems and then to render a service based upon these individual studies. It will be found that the dermatologist requires a type of service quite different in character than that of the gynecologist and vice versa. The same applies to all branches of medical science. A study of this type, of course, is directly related to the pharmaceutical curriculum, for in order to render a distinctive professional service, there must be a splendid educational background involving a curriculum that concerns itself with these factors.

THE PHARMACEUTICAL CURRICULUM.

For a period of six years I have traveled extensively throughout the United States and Canada. During this period I have made many visits to retail pharmacies and have been seated at the table with pharmacists in a frank discussion of their many and varied problems.

From such individuals, I, as a former member of several college faculties, am becoming aware that perhaps certain deficiencies are existing in our college curricula. The type of instruction as given does not receive any special criticism on the part of those who are engaged in the retail practice of pharmacy. I speak more or less specifically of the younger generation of college graduates.

Such young men and women are confronted with a varied line of problems in connection with the planning, conduct and development of a professional pharmacy. Those familiar with the duties attendant with the conduct of a professional pharmacy, are aware that these problems are quite different in character from those of the average type drug store, although they may appear at first hand to be similar in character.

It has come to my attention that the young pharmacist is not sufficiently familiar with important phases relative to the planning, conduct and development of a professional pharmacy. I feel that I speak with some authority in this connection, as my contacts have been extensive and quite varied.

Let me briefly outline some of these problems:

1. Selection and Evaluation of the Location.—The selection and evaluation of a location from a professional point of view necessarily involves many factors. Should the pharmacist lease a floor space in a Medical Arts Building, and if so, what floor should be selected? This is a problem that involves a study of the drift-flow of people, and in this connection there are likewise many factors to be considered.

Let us presume that floor space is not available in a Medical Arts Building. What should constitute the next best selection on the part of the pharmacist? Here, again, many factors must necessarily be considered such as the advantages and disadvantages of a corner, the parking problem, the drift-flow of people, relation of contemplated location from a buying center point of view, etc.

There are various other types of locations that enter into the picture. To what extent are we presenting the facts of the case relative to the evaluation and selection of a location? It must be borne in mind that the problem is quite different from that of an evaluation and selection of a location for the average type drug store.

2. An Introduction to the Problem, Including a Prologue to a Professional Career.—In that trinity involving the Physician (Physician and Dentist), the Pharmacist and the Patient, in which the pharmacist occupies one of three cardinal points, there are many invisible forces at work, which must necessarily be interpreted, at least in part, in order to achieve success as a professional pharmacist.

Included in these forces is the one related to the economics of the situation. For the most part, the graduate in Medicine has not received adequate instruction in the subject of medical economics. If such had been the case, the plight of the American physician would be quite different from the picture of to-day. This applies equally well to the subject of Pharmaceutical Economics. It has been my observation that the young man entering the field of professional pharmacy, for the most part, is not familiar with an understanding of these various relationships. It has been my privilege to have presented a series of lectures at Colleges of Pharmacy during the course of the past six years. After the presentation of the lecture entitled, "Man, a Tradition-Built Institution," the next in the series is that of "An Approach to the Problem, Including a Prologue to a Professional Career." In this lecture I attempt to define or rather re-define the fundamental principles involved, in which character is defined as the sum total of one's daily conduct and is considered paramount.

It would appear as though more time should be devoted to issues of this nature, so as to assist especially those of the younger generation, to be better enabled to meet the present-day onslaught of highly competitive measures in a system marked by an over-exploitation of commercialism.

THEORY AND PRACTICE OF PHARMACY PLUS.

The Challenge of To-day in so far as it relates to our Colleges of Pharmacy is one pertaining to an interpretation and translation of those things as learned in Theory and Practice of Pharmacy (Theory and Practice of Pharmacy in this case used in the broadest sense, to include the entire

college curriculum) in relation to the professional pharmacy. The conduct of a professional pharmacy is quite different in character than that of the average type drug store. Many are prone to feel that it is nothing more nor less than a question of a mathematical equation, ten or more times, five prescriptions per day. Such individuals assuming positions of responsibility, soon become acquainted with the fact that it is an entirely different story. Such individuals, for the most part, have worked in drug stores and have become imbued with so-called drug store psychology and many are not able to appreciate the problems confronting the professional pharmacist nor how to properly handle certain issues, especially in moments of emergency.

The proprietors of professional pharmacies have informed me that one of their most serious problems is that of securing young men and women who are able to conduct themselves in a proper manner in a professional pharmacy. Such individuals, for the most part, are not looking for young men and women who are able to step into the institution and to function in a one hundred per cent manner from the start, for they appreciate that there are many variable factors involved. They are looking for young men and women whose attitude toward their chosen calling in life, as well as toward allied professions, is of the best, and whose background consists not only of a so-called higher education, but who likewise are cultured individuals.

They are asking that our colleges devote a portion of the curriculum to training along related lines. It has been my observation that the average college graduate is lacking in many phases relative to the planning, conduct and development of a professional pharmacy. This is not said in a spirit of criticism; I appreciate the problem confronting the pharmaceutical educator, for there must be a thorough training in the fundamentals of pharmacy and its many ramifications.

What has been said of the employee is likewise true, in many instances, of the proprietor. I have contacted hundreds of professional pharmacists who are lacking in many respects, when it comes to planning and executing a proper promotional campaign.

It would appear that serious consideration be given to various phases of professional pharmacy, which at the present time, are for the most part, not included in the college curriculum. A few thoughts are given in the following:

1. An Approach to the Problem Including a Prologue to a Professional Career.
2. Evaluation and Selection of the Location.
3. Planning the Professional Pharmacy.
4. Atmosphere of the Professional Pharmacy.
5. Conduct of the Professional Pharmacy.
6. The Prescription Re-Defined.
7. The Library of the Pharmacist.
8. Potential Possibilities at the Command of the Pharmacist.
9. Professional Advertising.
10. Professional Window Displays.
11. Pharmacy in Relation to Dentistry.
12. Pharmacy in Relation to Agriculture.
13. The Baby Department.
14. The Clinical Laboratory.
15. Public Health Measures.
16. Personal Contact Relations with Members of Allied Professions.
17. How to serve members of Allied Professions in a distinctive manner, based upon the particular branch of medical science pursued by the colleague in question.

There are, of course, many other factors to be considered in addition to those points enumerated above. Certain Colleges of Pharmacy have included one or more of the above-mentioned points in the curriculum, and it is to be hoped that the scope of these activities will be enlarged upon in years to come.

IS THERE ANYTHING NEW UNDER THE SUN?*

BY THEODORE J. BRADLEY.

The thoughtful student of the history of medicine and related subjects is often struck by the close relationship between modern theory and practice and the theory and practice of workers in these fields in former times. These workers of old did not have the advantage of the immense mass of knowledge which has been accumulated during recent times, but their abilities were as great as the abilities of modern workers, and we are so often surprised by the similarity of old and modern ideas, that we wonder if there is anything new under the sun.

The question asked in our title is a paraphrase of a frequently quoted proverb, which traces back to the book Ecclesiastes, I–9, in the King James version of the Old Testament, which says: "The thing that has been, it is that which shall be; and that which is done is that which shall be done: and there is no new thing under the sun."

There are many variants of this thought, among which we find an old French proverb, which says: "There is nothing new except what is forgotten." Also, Daniel Webster said, in one of his masterly addresses: "What is valuable is not new, and what is new is not valuable."

A proverb or an epigram expresses a great deal in a few words, and it may be true in a general way, but proverbs are not always completely true in their application to a variety of cases to which they might be applied, and we find that the relationships of old and new practices in medical science may be grouped in the three following classes:

1. Ideas of which old practitioners had a more or less correct conception, with crude and imperfect means of accomplishment.
2. Ideas of which old practitioners had some conception, but no means of accomplishment.
3. Ideas of which old practitioners had neither conception nor means of accomplishment.

These three classes of relationships overlap each other in various ways and there are different ideas of what is meant by old and new, so an exhaustive discussion of them would require much more time than is available here. For this reason we must limit our discussion to a general survey of the subject, which is not claimed to be at all complete.

In any discussion of the history of medicine and its branches, like pharmacy, it is necessary to know and remember that there are three stages in the progress of medicine; these may be called mysticism, empiricism, and rationalism. The advance of medicine through these three stages keeps pace with the advance in culture and civilization in a country, so all three stages are found in the world to-day.

Mysticism, the first stage, is exemplified by the practices of the medicine men of savage tribes, hiding their ignorance under a veil of magic, which works on the religious superstitious beliefs and fears of their patients, who frequently recover from their illnesses and injuries in spite of the treatment they receive.

Some very able men have practiced medicine through all the ages, and they gradually learned that some of their mystical work was really helpful, though did not know why this was so. Thus, empirical medicine gradually developed, and a great deal of what we may call practical knowledge of the healing art was acquired.

* Section on Historical Pharmacy, A. PH. A., Dallas meeting, 1936.

Finally, the physician has been applying modern scientific methods to his work, and during the last few years, almost in our own generation, physicians in the more advanced countries have made advances in their understanding of their work. This has carried them far into the third and final stage of the development of medicine, which we call rationalism. In this stage, the physician is acquiring a more and more accurate knowledge and understanding of his work, so that he knows what treatment a patient needs, and why this treatment is helpful.

In Group I, we have classified theories and practices of which old practitioners had some conception, with crude and imperfect means of accomplishment. We shall briefly discuss four of these theories and their practice in past times and at the present time.

During all the ages, the primitive and ignorant medicine man took his drugs where he found them, and it would be difficult to find many substances, mineral, vegetable or animal, which have not been used as medicines at one time or another. The selection of a substance for use as a medicine was frequently based upon fanciful notions of similarity between disease and remedy, or between desired results and medicine. This method led to such apparently foolish ideas as the use of "sympathetic medicines," "the doctrine of signatures," and others of similar character. Among other medicines used in past times, we find a wide variety of animal parts and products, some of them of a filthy and disgusting nature. When these were used by mystical and empirical hit-or-miss methods, they were seldom effective, and for many years their use was ridiculed and most of them were abandoned. Nevertheless, these crude animal products were the forerunners of the long list of so-called biological remedies which are so widely used now, the difference being only in that the present-day biological remedies are prepared and used by scientific and rational methods.

A closely related parallel to the former use of crude animal products and of the present use of biological remedies is found in the modern development of one of the oldest theories of disease. This is Hippocrates' "humoral theory," which taught that the fluids of the human body consisted of blood, phlegm, black bile, and yellow bile, and that an individual's condition of health or disease depended upon the relative amounts of these different fluids in his body. Hippocrates was one of the greatest men in the long history of medicine, but he knew very little about anatomy or physiology, and probably nothing about what we now call the endocrine glands. Hippocrates' humoral theory influenced medical practice for more than two thousand years, but it was then abandoned and nearly forgotten. Nowadays, we have a rather extensive knowledge of the endocrine glands, and we know that the health of an individual is largely dependent on the secretions of these glands, which, after all, is a modern scientific development of Hippocrates' humoral theory.

Another belief of former times was in the possibility of a panacea or universal medicine which would cure all diseases and prolong life indefinitely. This was sometimes called the "elixir of life," and it was among the substances sought by the iatro-chemists and others, who largely extended our empirical knowledge of the materia medica. We no longer have any reason for belief in this idea, but modern methods of preventive medicine or hygiene have enabled us to more than double the expectation of life at any age from birth to maturity, so we continue to seek.

with a considerable measure of success, the objective of those who were looking for the elixir of life. Perhaps the most interesting of the old theories and modern applications which we have placed in Group I is drawn from physiological chemistry. Like medicine, empirical knowledge of chemistry extends back for a long time, but scientific chemistry has only a comparatively short history of about one hundred and fifty years. Until about one hundred years ago, it was believed that organic compounds could be produced only from other organic compounds or in living organisms, under the influence of what was called "vital energy." Then in 1828, Friederick Woehler, a German chemist, accomplished the synthesis of urea, a simple but nevertheless characteristic organic compound, from inorganic materials. This was the first of a long list of such syntheses of organic compounds, and it appears that work in this field is limited only by our knowledge of organic chemistry and the degree of our skill in doing the work. For nearly a hundred years, the conception of vital energy was completely abandoned, though there was some evidence of its being fundamentally true, if we could have understood and appreciated this evidence. Then came the recent astounding discovery of the substances we call vitamines. We cannot enter into a discussion of vitamines here, but their undoubted existence is proof that the idea of vital energy was fundamentally correct, though the old application of this idea was wrong.

We shall now discuss two illustrations of Group II of these old conceptions and modern developments. In this group, we stated that the workers of old had a correct conception, but no means of accomplishment of their idea. Prominent among these was the idea of the transmutation of metals, which was the objective of the alchemists for hundreds of years. Many of them claimed to have accomplished the transmutation of lead or other base metals into gold, but there is no conclusive evidence of the accomplishment of their claims, and the idea was abandoned for a long time. With the discovery of radium and the study of its properties, however, followed by our recently acquired knowledge of the structure of the atom, we have come to believe that the transmutation of metals is theoretically possible, and the work of the alchemists has been resumed, with a possibility that their objective may be accomplished some time.

Another idea of ancient physicians was the possibility of producing insensibility to pain, which we call anesthesia, but physicians of old could not accomplish this effectively. The best they could do was to knock the patient insensible, which was highly dangerous, or to administer sleep-producing drugs, but narcosis is not anesthesia, and the victim would awaken when his suffering became intense. Then came the discovery of anesthesia, in Georgia and New England, which is one of the greatest boons ever granted to mankind. The accomplishment of this was a new thing, but the idea of it was not.

Lastly, we have the group of accomplishments in medicine and related sciences which were not even thought of until they were accomplished. We can think of at least three of these, all of them interesting and important, but they can only be mentioned very briefly here.

The first of these is bacteriology and its dependent antisepsis, which we believe to be the most important and helpful discovery ever made. If this is so, Louis Pasteur is one of the greatest men who ever lived, and we are anxious to grant this preëminent position to him. Perhaps some will deny that the ideas of the bacterio-

logic origin of many diseases and of antisepsis were not conceived by some ancient physicians, but a rather extensive study of the history of medicine fails to show that anyone had an accurate conception of either.

Other discoveries in this group are the X-ray and the radio-active properties of radium and a few other elements. We have not been able to find a record that anyone ever thought of these things until they were discovered. Finally, we have the radio and its wonders, which were not dreamed of until it was developed from Marconi's wireless telegraph. Several other manifestations of electrical energy could be listed in this group, and the end of these discoveries and developments has not yet been reached.

This is as far as we can proceed with our discussion within the limitation on our time. We have shown that there are interesting relationships between many modern medical practices and the practices of physicians in older times, and that there is a great deal of truth in the proverb "There is no new thing under the sun," but we have also shown that this proverb is not entirely true.

SOFT SOAP LINIMENT, SOFT SOAP AND SOAP LINIMENT.

PROPOSED FORMULAS FOR THE U. S. P.*

BY CYRUS L. COX.[1]

LINIMENTUM SAPONIS MOLLIS.

Soft Soap Liniment, or Tincture of Green Soap, is widely used as a detergent. The U. S. P. VIII and X formulas call for soft soap, made from linseed oil. Such a product has a persistent linseed oil odor which remains after use for cleansing. The odor is so persistent that even after the odor of the lavender oil has been rinsed off the linseed oil odor remains. In the U. S. P. IX the soft soap liniment was made from a cottonseed oil soft soap. This preparation was free from objectionable odor. Another objection to the formula in the U. S. P. X is that there is more alcohol in the preparation than is necessary. This high alcohol content is used because of the difficulty experienced in dissolving soft soap in a menstruum of lower alcohol content.

The following formula is easily compounded, and overcomes the objections mentioned above:

Cottonseed Oil	305 cc.
Oil of Lavender	20 cc.
Alcohol	200 cc.
Dekanormal Solution of Potassium Hydroxide	65 cc.
Dekanormal Solution of Sodium Hydroxide	32 cc.
Water, a sufficient quantity	
To make	1000 cc.

Mix the cottonseed oil, oil of lavender, alcohol and the dekanormal solutions. When a clear solution results, add enough water to make the product measure 1000 cc. Filter.

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* Section on Practical Pharmacy and Dispensing, A. PH. A., 1935.

[1] Associate Professor of Pharmacy, Rutgers University, College of Pharmacy.

This product has the same soft soap content as the U. S. P. IX soft soap liniment, but contains about 130 cc. less alcohol. If the alcohol content is much less than this, the product is too syrupy in consistency.

Sapo Mollis.—Soft soap made by the U. S. P. IX formula is a much superior product to those made by the U. S. P. VIII or the U. S. P. X, wherein linseed oil was used. The objection to the linseed oil soaps is the persistent odor of the oil. When this product was made from cottonseed oil, as in the U. S. P. IX, this objection was overcome. The chief objection to cottonseed oil was the difficulty experienced in saponifying the oil. The fault is in the directions given in the U. S. P. for compounding; there being too much water present during saponification.

Saponification takes place more readily if no water, other than that in the dekanormal solutions, is added until after saponification is complete. Simply mix the oil with the dekanormal solutions and stir occasionally until an emulsion is formed, then set the mixture aside for about twenty-four hours. (No heating is required.) At the end of this time the oil will be saponified. Add enough water to make the product weigh 1000 Gm. The addition of alcohol as in the U. S. P. VIII and IX, or of glycerin as in the U. S. P. X, are unnecessary.

The substitution of sodium hydroxide for part of the potassium hydroxide lowers the cost of the product, but the extent to which it can be substituted is limited, as the use of sodium hydroxide in too large a quantity tends to make the soft soap "jelly-like."

The following formula and directions yield a very satisfactory product with the minimum of labor and attention:

Cottonseed Oil	430 Gm.
Dekanormal Solution of Potassium Hydroxide	100 cc.
Dekanormal Solution of Sodium Hydroxide	50 cc.
Water, a sufficient quantity	
To make	1000 Gm.

Mix the dekanormal solutions with the oil. Stir occasionally during the three hours, then set aside for twenty-four hours. Add warm water enough to make the product weigh 1000 Gm.

Linimentum Saponis.—Due to variations in soap, variations result in soap liniment when it is made by the U. S. P. formula. If, instead of using olive oil castile soap, this liniment is made from the required amount of olive oil and sodium hydroxide needed to make the given amount of castile soap, these variations are reduced. The liniment so made is less difficult to prepare and has less precipitate.

Olive Oil	64 cc.
Oil of Rosemary	10 cc.
Alcohol	700 cc.
Camphor	45 Gm.
Dekanormal Solution of Sodium Hydroxide	18 cc.
Water, a sufficient quantity	
To make	1000 cc.

Dissolve the camphor and the oil of rosemary in the alcohol, add the olive oil, then the dekanormal solution of sodium hydroxide. Stir occasionally and when clear, add the water. After twenty-four hours filter.

The quantities of olive oil and sodium hydroxide called for in the above formula will make 60 Gm. of olive oil castile soap, the amount of soap called for in the U. S. P. formula. Therefore, the only practical difference between the liniment made by the above formula and that made by the U. S. P. formula is the small amount of glycerin formed as the result of the saponification.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

ERNEST LITTLE—CHAIRMAN OF EXECUTIVE COMMITTEE, A. A. C. P., EDITOR OF THE DEPARTMENT.

The paper presented below is both an important and timely one and should be carefully read by the readers of this section. It aroused considerable discussion when read before the Conference of Teachers of Chemistry at Dallas, Texas, last August.

Doctor Klemme has been appointed chairman of the A. A. C. P. Committee on Pharmacy Predictive and Achievement Tests and has already demonstrated great enthusiasm for this work. By consent of the Executive Committee, his committee has recently been enlarged and will, in all probability, present several important recommendations to us at the New York meeting next August. It is important that we should be in a position to give their recommendations intelligent consideration and arrive at a decision based upon an adequate appreciation and analysis of the important factors involved.—ERNEST LITTLE.

THE APPLICATION OF OBJECTIVE EXAMINATIONS IN ELEMENTARY ORGANIC CHEMISTRY.

BY CARL J. KLEMME AND JAMES H. HUNTER.*

In submitting this paper on the application of objective examinations the authors wish to call to your attention and emphatically stress the fact that the setting up of objectives for any given course and the application of objective examinations in those courses is a logical outgrowth of and an adjunct to the work of the Special Committee on the Scope of Survey. The real goal of this work is not to study objectives and objective examinations so much as it is to determine whether or not schools of pharmacy are at present teaching the subjects which will best fit the student for a life's undertaking in the field of pharmacy. In the final analysis we are endeavoring to measure the achievements of students during their four years in college and to correlate these achievements with the requirements of the profession. Furthermore, the National Association of Boards of Pharmacy realized the necessity of making a survey of pharmacy schools in order that the state examining boards might know which schools were worthy of recognition. Also pharmacy is essentially the same, whether it be in Maine, California, Washington, Kansas or Florida, and it is to be hoped that all recognized colleges of pharmacy will in the future teach essentially the same subjects in order to meet more or less standardized requirements. Therefore, as we proceed with a discussion of objective examinations, let us not lose sight of our major objective.

These aims can be accomplished only if definite objectives for each course taught are set up. Since these objectives outline what the student is expected to accomplish, they are in reality the key to the entire situation. *First*, they should be based upon the requirements of the profession. In other words, a definite list of objectives based on these requirements will give the teacher a guide in any particular course so that the necessary phases will be taught and unnecessary or superfluous material, which may in many cases be time-consuming, will be omitted. *Second*, they serve admirably as the basis for examination of student achievement.

* Purdue University, College of Pharmacy, Lafayette, Indiana.

Therefore, we come logically to the necessity of testing our objectives by examination.

This paper deals with the application of objective examinations in Organic Chemistry as taught at the Purdue University School of Pharmacy, and the questions are based on the outline of objectives as listed in a paper by one of us (KO and submitted at the last meeting of this body). While the actual work on these objective examinations looms large in our minds, we must not lose sight of the fact that these examinations are designed primarily to study the list of objectives in this course with the view of submitting that list of objectives as a standard basis in teaching Organic Chemistry in American Colleges of Pharmacy.

While there is a maze of factual knowledge to be learned in Organic Chemistry, we have endeavored to shape the objective examinations in such a way as to depart to a large extent from excessive and irrelevant factual knowledge and to cultivate as much as possible the reasoning power of the student. A better general knowledge of the underlying principles of Organic Chemistry may thus, by eliminating the "crammed" and short-lived facts and instilling into the mind of the student the tendency to reason on the general principles, be brought within the grasp of the student. The types of questions which have been used in the objective examinations during the past academic year have been somewhat restricted in number. We have used primarily the True-False, Completion, Multiple Choice and Match-List types. In addition to these, the subject itself offers questions such as the completion and balancing of organic reactions and reactions involved in elementary syntheses. In formulating any of these questions one must be careful above all to see that each and every question is valid without exception. In the case of True-False statements, for example, each statement must be either completely correct or entirely wrong. The Match-List form must be such that there can be no confusion regarding the items to be matched. A question should not be unnecessarily long and confusing but should be stated as briefly and as clearly as possible.

Bi-weekly objective examinations of fifty-minute duration were given throughout the past year and these examinations dealt only with the material which had been presented in the course for the two preceding weeks. Such frequent examinations lightened the burden of reviewing for the student, permitted a more thorough examination, and afforded a more complete and accurate record of the students' ability when the final averages were compiled. Generally, these bi-weekly examinations consisted of three, sometimes four, parts. For example, 100 True-False statements, 20 to 25 Match-List questions, and 15 to 25 reactions, syntheses of various types were frequently included. Variations of this particular type of examination were made to suit the particular phase of work concerned.

One great disadvantage in beginning the use of objective examinations is the time consumed in formulating them. Whereas an essay type of examination requires but a few minutes for preparation, a typical objective examination to cover a fifty-minute period generally requires some five to six hours for its preparation. It is hoped that this time of preparation will be materially decreased after an adequate file of objective questions has been prepared. However, it is the feeling of the authors that such a file cannot be regarded as permanent and must continually undergo revision according to the advancements in the subject. The disadvantage encountered in the length of time for preparation was to some degree compensated

by the ease and rapidity with which this type of examination could be marked and evaluated, an operation which could be accomplished in about one-third the time required for grading the essay type of examination.

The personal element of the instructor's attitude or feeling toward any given student was eliminated almost entirely by the objective examination and still further by the fact that papers were numbered instead of bearing the student's name. Slips of paper, each bearing a different number, were drawn by the students immediately preceding an examination. Each student signed the slip, the slips were then placed in an envelope which was passed around for that purpose, and the envelope sealed, not to be opened until after the grades had been placed on the papers and posted, according to number, on the bulletin board. The name of any student corresponding to his examination paper was ascertained by the instructor only after publication of the grades and then solely for the purpose of filing his record. All examination papers, excepting the final examinations, after being corrected and graded were returned to the students in order that they might observe their errors and profit thereby in future examinations.

The results of each examination were posted according to the students' numbers rather than their names and revealed the student's actual examination grade, his relative class standing and his standing as compared to previous examinations. While students of lower class standing did not know the name or names of those having higher standings, they at least knew some one was above them and thus the incentive to raise their class standing was aroused. Those students who possessed a high standing in the class were likewise determined to retain their positions.

During the second semester daily quizzes were used in order to provoke continuous review and lessen the customary cramming for the fifty-minute examinations. These quizzes, which were objective in nature and generally of five to ten minutes' duration, were given at each meeting of the class, except the period of the bi-weekly examination and the period immediately following. Each daily quiz was based on material presented in the preceding lecture.

Objective examinations were successfully extended to laboratory work. Two of these examinations were given each semester and were similar in form to the examinations used in lecture work, except that in addition to the usual types of questions another type requiring inductive reasoning on the part of the student was employed. In this type of question a number of facts pertaining to some work within the scope of the examination were given and from these facts the student was required to draw the logical conclusion. This was found to be a very favorable type of question.

The class records for the year indicated a steady improvement as the year progressed. The improvement was particularly noticeable from the beginning of the second semester to the close of the school year. Since this marked improvement was associated with the consistent study and review made necessary by the daily quizzes, it is believed that such development may be directly attributed, at least to a large extent, to the daily quizzes. However, comprehension of the work and familiarity with the subject matter undoubtedly had something to do with it. Consequently, the authors propose to reverse the process during the coming year, giving the daily quizzes during the first semester only. A year from now we may be able to say more definitely something concerning the actual value of daily quizzes.

This particular class which served as guinea-pigs for this first application of objective examinations manifested to rather a marked degree a tendency to memorize rather than analyze, for the inclination to memorize facts predominated as exemplified by the ability of the class to answer True-False statements and Match-List questions in a very satisfactory manner on the one hand, and its failure to satisfactorily cope with reactions, syntheses and problems on the other hand. This condition was rather striking in view of the fact that the instructors made unusually strong efforts to stress the use of reasoning in the course. Perhaps this class was no worse than preceding classes with respect to this mental viscosity, but, if not, the objective examinations certainly served to bring out the fact in a very striking way.

There was a rather remarkable correlation between the semester averages of individual students in the lecture examinations, the daily quizzes and the laboratory examinations despite the fact that the records of these examinations were filed separately throughout the year. It is barely possible this correlation was accidental but the fact remains that it was much closer than had been previously observed under the essay type of examination.

In conclusion, the authors wish to point out that they are not sold on the objective type of examination. It is believed that this type of examination has its purpose and that it is serving admirably in the present study of objectives, but the authors would not care to recommend its use as a general thing in education nor, after using the objective examination, would they care to revert completely to the essay type, but rather to a careful combination of the two types. The more important facts observed during the first year's experience with objective examinations may be summarized as follows:

1. The objective examination requires an unusual amount of time and consideration for its preparation.
2. The objective examination, if properly prepared, affords an accurate means of following any given list of objectives, and testing each student's knowledge of those objectives.
3. In preparing to take an objective examination, students have a tendency to memorize facts and to discount the importance of reasoning.
4. The objective examination is perhaps the fairest yardstick for the measurement of relative achievement.

BELIEVED GERM OF LEPROSY ISOLATED.

Dr. Earl B. McKinley, of George Washington University, has expressed his belief that "the germ of leprosy has been isolated." Dr. McKinley is dean of medicine at the University and, formerly, with the Rockefeller Foundation in the Philippines. He is arranging for further research work at Crillon Island, the home of nearly 6000 lepers. Dr. McKinley taught successively at Michigan, Baylor and Columbia Universities and for three years was director of the School of Tropical Medicine at the University of Puerto Rico.

HOSPITAL FOR NARCOTICS.

The corner-stone for the Federal Government's new hospital for narcotics has been laid. It is located near Fort Worth, Texas, and represents a marked advance in the treatment of victims of narcotics.

The new hospital and farm, which will accommodate 1200 patients, will be equipped with an adequate staff of resident physicians. Patients will include several groups of addicts: Federal prisoners, those who choose to remain after completion of their sentences, those placed on probation by Federal courts and any who may seek treatment voluntarily.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

ARTICLE III of Chapter VII reads: "The objects and aims of local branches of this Association shall be the same as set forth in ARTICLE I of the Constitution of this body, *and the acts of local branches shall in no way commit or bind this Association, and can only serve as recommendations to it.* And no local branch shall enact any article of Constitution or By-Law to conflict with the Constitution or By-Laws of this Association."

ARTICLE IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meeting of the Local Branches shall be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten with wide spaces between the lines. Care should be taken to give proper names correctly and manuscript should be signed by the reporter. *Please advise us of changes in Roster and mail reports promptly.*

BALTIMORE.

The Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION held its January meeting on January 14th, at the School of Pharmacy Building, University of Maryland. This was the annual business meeting at which reports of officers and the several committees were presented; and officers of Branch for the current year elected.

In addition to the consideration of business matters, and interesting committee reports, the Branch was favored on this occasion with an illustrated address by Dr. David I. Macht, physician and pharmacologist, on the "Therapeutic Uses of Snake Venoms." This proved to be an unusually interesting and timely address; covering subject matter of particular interest to physicians and pharmacists at this time. Because of the current scarcity of published information on this subject available to pharmacists generally, an abstract of this address is appended to the report of meeting.

The meeting was opened by President Hewing at 8:30 P.M., and after the minutes of the previous meeting had been read the reports of Secretary-Treasurer Fuqua were called for. The secretary's report precipitated some discussion as to what additional steps might be taken to increase attendance at meetings of the Branch, and some members were of the opinion that a fixed meeting night would be preferable to the varying dates on which meetings have previously been held. A motion that future meetings be held, if possible, on the second Thursday of the month was offered by Frank Black, seconded by L. M. Kantner, and approved by vote of the members present.

In the absence of Chairman Gilbert Josephs, of the Membership Committee, his report was read by Charles L. Meyer. This report showed that some progress had been made during the past year in securing additional members. A motion offered by Wm. F. Reindollar, expressing the appreciation of the Branch for the activities of Mr. Josephs as chairman of this committee, was carried.

Chairman Marvin J. Andrews, of the Professional Relations Committee, gave an interesting oral report covering the activities of his committee, and of other groups interested in building up more cordial relations between pharmacists and members of the other allied public health professions. As a detailed account of U. S. P. and N. F. propaganda work being carried on in this and other states had been given at an earlier meeting of the Branch, this was not repeated.

One of the most interesting reports submitted was that of Chairman Samuel L. Fox, of the Committee on the Science and Practice of Pharmacy. This report indicated that accomplishments in the science and practice of Pharmacy during the past year had been especially noteworthy. A careful discrimination and a close contact with developments in Medicine and Pharmacy were evidenced in the subject matter selected, and in the manner of its presentation in this report. Spontaneous applause greeted Mr. Fox on the completion of his report.

A brief but comprehensive report was presented by Chairman DuMez, of the Committee on Education and Legislation. In his report Dean DuMez called attention to the interesting educational experiment which calls for a modified form of internship for students of Pharmacy in the State of New Jersey. The more important recent legislative enactments and judicial decisions affecting pharmacists were enumerated in this report, and satisfaction was expressed with the status of proposed Federal pure food and drug legislation at that time.

At the close of these reports President Hewing proceeded with a report and valedictory address as retiring president. When called on for nominations, however, the Nominating Committee, through Chairman L. M. Kantner, proposed the following slate of officers for 1937: For *President*, A. N. Hewing; for *Vice-President*, John C. Bauer; for *Secretary-Treasurer*, Robert S. Fuqua.

Despite protests from Mr. Hewing against his reëlection as presiding officer of the Branch for a second term, the above nominees were elected. ROBERT S. FUQUA, *Secretary*.

THERAPEUTIC USES OF SNAKE VENOMS.*

BY DAVID I. MACHT., M.D.

The ancients used snake venoms empirically, and pharmacopœias and dispensatories from mediæval times to the nineteenth century made mention of drugs of reptilian origin. The rational employment of snake venom for therapeutic purposes, however, is a development of modern experimental pharmacology. From the therapeutic standpoint, snake venoms may be divided into three groups: (1) The venoms of the *Crotalidæ*, or rattlesnakes, of which the first group is chiefly comprised, have been employed in treating epilepsy. Considerable medical literature has been published on this subject. The treatment of epilepsy with crotalin, however, has been largely discontinued because of its rapid decomposition and the difficulties encountered in preparation of a sterile solution of this venom. (2) To the second group belong the venoms of the moccasin (*Ancistrodon*) and Russell's viper, which are said to promote coagulation of blood and have been recommended in the treatment of such pathological conditions as purpura, uterine hemorrhage, etc. While moccasin venom has no effect on true hemophilia, some English investigators claim that the venom of Russell's viper is efficacious even in that condition. (3) Much rational scientific experimentation has been done and many clinical data have been obtained concerning the third group of venoms. It is the venom of the cobras that is especially rich in neurotoxins or those constituents which even in small doses affect the nerve cells and other nerve elements. Cobra venom has been found useful in relieving the severe pain induced by advanced and hopelessly malignant tumors, and in such cases has been found, first by French scientists and then by the speaker and his collaborators, to be an effective substitute for narcotics or other analgesics. The dosage of the solution of cobra venom prepared is biologically assayed in mouse units. Dr. Macht has experimented extensively with this drug in his laboratory and as the result of much pharmacological study has developed a method of preparing a safe, sterile solution of cobra venom, suitable for clinical administration. After long and careful laboratory experimentation, the speaker secured the collaboration, in a clinical study of this method of treatment, of several eminent surgeons, particularly of Dr. Curtis F. Burham of the Howard A. Kelly Hospital, and of the late Dr. Joseph Colt Bloodgood.

The results derived from laboratory and clinical investigation of the drug have been very satisfactory. Sixty per cent of a series of two hundred cases experienced definite relief of pain and 35 per cent gave evidence of marked relief after a series of cobra venom injections.

The usual therapeutic dose of the drug for adults is 5 mouse units. This amount is injected intramuscularly for three or four successive days. After relief from pain is achieved, injections are continued at longer intervals, and one or two doses a week may suffice to keep the patient comfortable. In some cases, however, larger doses are required, no unusual procedure even where ordinary narcotics are employed.

The results of the laboratory studies by Dr. Macht on the mechanism of analgesia produced by cobra venom point to the higher centers in the brain as its seat of action. Cobra venom

* Abstract of an address, delivered January 14th, before Baltimore Branch of the A. PH. A.

does not produce local anesthesia either of sensory nerve endings or the nerve trunks but like morphine and opium acts on the cerebral areas concerned with pain. However, morphine and cobra venom exhibit a marked difference in action. While morphine promptly produces an analgesia which lasts a few hours and then wears off, cobra venom does not usually become effective until several injections of the drug have been given on successive days but the analgesia, once induced, is of much longer duration than that effected by morphine. This difference in action between cobra venom and morphine is explained in part at least by biochemical studies made on auto-oxidative processes taking place in fresh brain and muscle tissues with and without cobra venom and morphine, respectively. Both of the drugs are largely localized in the brain tissue. Morphine, however, is rapidly oxidized or otherwise chemically changed after it comes into contact with brain tissue while cobra venom remains unchanged for a much longer period and for that reason exerts a therapeutic effect of much greater duration.

In the clinical cases so far treated with cobra venom, no symptom of narcotic addiction has been noted. On the contrary, cobra venom has been successfully substituted for morphine and other opium narcotics in treatment of patients suffering from addiction. The use of cobra venom as an analgesic is now being extended not only in cases of hopelessly malignant tumors but also in patients suffering with chronic diseases characterized by severe pain, such as tic douleureux and other neuralgias, and chronic arthritis.

The successful therapeutic dosage of cobra venom (much smaller than that advocated by French investigators) is not as small as that of many well-known official drugs. When tested on cats, it is less poisonous, weight for weight, than aconitine and ten times weaker than ouabain. Yet such is the peculiar psychological reaction on the part of the inexperienced—whether laymen, pharmacists or physicians—that the word "cobra" instantly suggests a horrible death-dealing reptile whereas ouabain is considered only with equanimity and regarded as but a useful heart tonic. This is but another illustration of the fundamental pharmacological dictum that every drug is a poison and practically every poison may be used as a medicinal agent. Whether it shall serve in one capacity or the other depends on a complete knowledge of its action and on the various conditions which must always be taken into account before initiating any therapeutic procedure.

CHICAGO.

The monthly meeting of the Chicago Branch, AMERICAN PHARMACEUTICAL ASSOCIATION, was held January 19th, at the University of Illinois College of Pharmacy.

President Morrison opened the meeting and called for the report of the Nominating Committee. Dean Day presented the report and the following were unanimously elected as officers of the Branch for the coming year: *President*, H. M. Emig; *First Vice-President*, Lawrence Templeton; *Second Vice-President*, R. A. G. Linke; *Third Vice-President*, O. U. Sisson; *Secretary-Treasurer*, R. E. Terry; *Delegate to the House of Delegates*, R. E. Terry.

Secretary Templeton read the financial report for the year 1936.

A resolution of condolence was adopted lamenting the death of Wilhelm Bodemann, well-known Chicago druggist, who held a life membership in the ASSOCIATION.

An engraved testimonial of appreciation was presented to Professor Emeritus Clyde M. Snow by the faculty of the University of Illinois College of Pharmacy, expressing the warm friendship that has existed during his thirty-four years of teaching at the College.

President Morrison introduced the speaker of the evening, Dr. H. A. Shonle, of the Eli Lilly Company who discussed "New Synthetic Remedies."

Dr. Shonle pointed out that many of the medicinal chemicals are the same regardless of whether they have been abstracted from plants or prepared synthetically in the laboratory. Attempts are made by the chemists to reproduce natural plant drugs and in many cases the natural drug is used only as a pattern in an attempt to improve the therapeutic qualities of the drug. Many synthetic remedies have also been produced that have no similarities in chemical structure to plant constituents.

He explained that most of the future remedies may be expected to come from the synthetic chemists as most of the plant constituents have already been discovered. Many synthetic chemicals have been known for years before they have been used as medicines. Mandelic Acid was cited as an example.

A discussion, accompanied by lantern slides, was given of the Antimony compounds, Mercurials, Arsenicals, Prontylin (only in the research stage), Mandelic Acid, the Barbituric Acid group, Cocaine and Metycaine, Ergot alkaloids, Cholesterol and the Vitamins.

Certain rules are used by the chemists in developing mercurials. When the mercury is separated from the benzene ring the bactericidal power is increased and the toxicity is decreased. Divalent sulfur inserted into the molecule stimulates tissue healing.

In the barbituric acid group the molecule is split into two groups, the aliphatic group or lipoid soluble and the urea side is looked upon as the solubilizing or water-soluble group.

Attempts have been made to introduce alcohol, ether, ketone and analgesic groups into the molecule, all either destroying or modifying the desired results. The dose goes up with the increase in molecular weight and this is probably due to the lowered solubility of the compounds.

The structure of cocaine was studied and this led up to procaine. Most of the synthetic local anesthetics are based on the same chemical model and if future progress is to be made in this field the organic chemists should find a new model. Metycaine is away from the old model of local anesthetics.

Lately the active constituent of ergot, ergotocin, has been isolated and its empirical formula is known. As soon as the structural formula is known the chemists will attempt to synthesize it.

The importance of cholesterol in medicine was shown by mention of the fact that it is the basis of sex hormones, heart poisons, provitamin D, bile acids, and many other compounds based on the cholesterol pattern.

A detailed discussion was given of the work done by the chemists on the vitamins showing the progress that has been accomplished in the last few years by the chemists in determining the formulas of the vitamins and the synthesis of some.

Dr. Shonle closed his very interesting discussion by declaring that the next field for the chemist to decipher is that of the proteins in an attempt to discover from the chemists' standpoint the structure of the antitoxins, etc.

The meeting was closed by the large group assembled giving Dr. Shonle a standing vote of appreciation and thanks for his very interesting presentation.

LAWRENCE TEMPLETON, *Secretary.*

NEW YORK.

The January meeting of the New York Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held January 11, 1937, at the Columbia University, College of Pharmacy, 115 West 68th Street, N. Y. C.

President F. Schaefer presided and about fifty members and guests were present.

The minutes of the December meeting were read and approved.

The Treasurer, Mr. Currens, reported a balance, January 11th, of $286.03.

Chairman Hauck, of the Committee on Membership, reported that he was endeavoring to enroll those members of the Branch who are not members of the A. PH. A., in the latter organization.

Dr. Kidder drew attention to the date February 9, 1937, stating that there would be a celebration of the twenty-fifth anniversary of the Fordham University, College of Pharmacy. Dr. Wimmer stated that the celebration was in charge of Joseph Hammer and he hoped that a large delegation from the Branch would take part.

Chairman Lehman, of the Committee on Education and Legislation, reported as follows:

"The U. S. Supreme court having declared the Fair Trade Laws of Illinois and California, valid, especially in the matter of the second clause, which binds non-signatories, efforts are being made in this state to obtain a reversal of opinion on the part of the Court of Appeals, which based its adverse opinion on the clause number two in question. The New York State Pharmaceutical Association has filed a brief, 'Amicus Curiæ' written by its attorney, Joseph J. Hammer, in the case of Bourjois Sales Corporation *vs.* Abraham Dorfmen, which is to be tried in the Appellate Division in the next few days. In case the court refuses to reverse itself, new legislation, reënacting the law may be necessary.

"In order to strengthen the Robinson-Patman Law, it is proposed that all states adopt a model law after the federal act. It is stated that various trades are sending similar proposed laws

to their constituents, for enactment, and it is hoped that New York State will have its bill in, at an early session of the legislature. The N. A. R. D. is sending copies of the proposed law to the various state organizations and local branches.

"The New York Pharmaceutical Council is favoring an ordinance which, if enacted, will place a tax fee or license fee on any itinerant vendor of ice cream to the extent of $100.00 for each vehicle so selling ice cream on the streets of this city. In case of two or more salesmen to the vehicle, there is an additional fee of $10.00 for each additional individual so employed. Violations are to be penalized by a fine not to exceed $200.00, and if unpaid, the violator shall be confined to the county jail for a term of not more than 30 days.

"The Health Commissioner of the City of New York, desires a list of all pharmacies which are open all night, or those that give night service by responding to night bells. Please notify the New York Pharmaceutical Council if you come in that category. Commissioner Rice claims that much inconvenience has been caused to persons desiring to have prescriptions filled at night.

"The City Department of Finance has at last admitted that Cod Liver Oil is a food, not a medicine. This refers, however, only to the unmixed oil, not emulsions, nor Vitamin combinations.

"The New York State Legislature and the Congress of the United States are now in session, and we may expect to reap a big crop of bills of interest to the pharmaceutical profession. So far only rumors have reached your Chairman but by next meeting he hopes for much news to report."

A motion by Mr. Mason (seconded by Mr. Lehman) that a Program Committee to consist of one member from each borough, one member from each College of Pharmacy and the secretary, be appointed, was carried. President Schaefer appointed Mr. Mason as Chairman. Others are to be appointed later.

The chair was then turned over to Dr. Canis who proceeded to the election of officers.

The Nominating Committee reported its decision to renominate all present officers. These are: *President*, Frederick C. A. Schaefer; *Vice-President*, Otto F. A. Canis; *Secretary*, Horace T. F. Givens; *Treasurer*, Turner F. Currens; *Committee Chairmen:* Education and Legislation, Robert S. Lehman; Progress of Pharmacy, Leonard W. Steiger; Professional Relations, James H. Kidder; Membership, Rudolf O. Hauck; *Secretary, Remington Committee* and *Delegate to the House of Delegates*, Hugo H. Schaefer.

A motion by Mr. Mason (seconded by Dr. Wimmer) that the report be accepted and one ballot cast was carried and the officers were declared elected.

President Schaefer resumed the chair and called for the report of Mr. Steiger on the Progress of Pharmacy. His report is as follows:

"U. S. Patent No. 2,064,840 was granted 12/22/36 to J. Leon Lascoff, for a capsule-filling machine.

"U. S. Patent No. 2,065,196 to Ivan Parfentjen of Pearl River (Lederle Laboratories) for a method of Purification of Antitoxin and the like. A proteolytic enzyme is added to antitoxic serums under such conditions as to digest the greater part of the serum proteins without substantial loss of antitoxin. The digestion is carried out under acid conditions, not greater than p_{H4}. This is the first important improvement since the invention of the ammonium sulphate method.

"U. S. Patent No. 2,066,302 to John Reichel, assignor to Sharp & Dohme for lyophilic biologically active substances. As new products, lyophilic sera, etc., in a solid state, obtained by the rapid freezing at about $-70°$ C. and removal of frozen water from the frozen material at high vacuum. The material is capable, when water is added thereto, of forming a liquid product similar to the original substance in its biological and therapeutical properties.

"U. S. Patent No. 2,066,742 to Hans Schmidt, assignor to Winthrop. A neutral complex compound of trivalent antimony with neutral alkali metal saccharate. Claimed to be a valuable medical agent.

"*Drug Topics* quotes Dr. Russell M. Wilder on the 'Use of Protamine Insulin at the Mayo Clinic.' The new insulin is said to have several advantages, the principal one being that it is absorbed quite slowly into the blood and consequently has a longer action and makes necessary fewer injections.

"Dr. C. H. Best, who discovered Insulin, read a paper on 'Protamine Insulin' at the recent convention of the Canadian Medical Association. Protamine insulin, according to Dr. Best, is obtained in Canada from Salmon Sperm, principally from the Fisheries Biological Station at Nanaimo, British Columbia. The linking of protamine with insulin was the outcome of the work of Dr. Gustav Haggerdorn of Copenhagen, Denmark."

President Schaefer then introduced the guest speaker, Dr. C. R. Addinall, Director, Library Service Bureau, Merck & Co.

Dr. Addinall spoke on the subject of "Choline and Its Derivatives."

At the conclusion of his talk, Dr. Addinall was accorded a rising vote of thanks, and the meeting adjourned.

HORACE T. F. GIVENS, *Secretary.*

CHOLINE AND ITS DERIVATIVES.*

The recent announcement of the award of the Nobel Prize for medicine and physiology for, 1936 to Sir Henry Dale and Professor Otto Loewi compels our interest in the achievements of these two eminent biochemists and makes a review of the recent developments in the pharmacological field of choline derivatives of timely importance.

It is commonly understood that the coördination of the activities of the body is carried out, to large extent, by the transmission of physical impulses along the nerves and by the transportation in the blood of chemical substances now known as hormones from the endocrine glands to the seat of action. In addition it has been known for some years that the sympathetic and parasympathetic nerves of the autonomic system controlling the involuntary activities of the viscera, the heart and the blood vessels, do not exercise this control by nerve impulse but by the liberation of powerful chemical compounds. The first clear demonstration of this chemical transmission of nervous effects was given in 1921 by Otto Loewi who discovered that, upon stimulation of the vagus nerve in a frog, a substance was liberated in the heart muscle which exerted a parasympathetic action upon perfused tissues. He recognized the close similarity of this substance with acetylcholine whose intense activity had been recognized by Reid Hunt thirty years ago, long before there was any reason to believe that it occurred in the body or had any important natural function. As a result of a brilliant series of researches it was finally proved by Sir Henry Dale that the actual chemical substance which is released at all parasympathetic nerve endings on stimulation is acetylcholine. Extension of this work by other investigators has shown that this chemical compound is released upon stimulation, not only of post-ganglionic and pre-ganglionic parasympathetic nerves but of preganglionic sympathetic nerves and that, probably, every motor nerve impulse to muscle fiber produces its effect by liberating acetylcholine and thus stimulating the fiber to contraction.

The name "choline" was suggested by Strecker who discovered the base, $HO.N(CH_3)_3.CH_2.CH_2OH$, in the bile of cattle and swine. It is found as a constituent of lecithin in the brain and in egg yolk. It is widely distributed in plant and animal organisms and is probably a constant product of plant life necessary for the building up of all plant cells.

Choline is a non-crystallizable syrupy liquid with a strong alkaline reaction and little physiological activity. Consequently the hydrolysis of its potent ester, acetylcholine, $HO.N(CH_3)_3.CH_2CH_2OCOCH_3$ into choline and acetic acid results in an almost complete loss of physiologic action. In consequence, although acetylcholine is a substance of tremendous physiologic potency its usefulness as a therapeutic agent is greatly limited by its susceptibility to rapid hydrolysis and nearly complete inactivation by a specific cholinestrase existing in the blood stream.

In 1914, Dale carried out an extensive research on the action of certain esters and ethers of choline and their relation to muscarine. This investigation started with the observation that certain specimens of ergot and its extracts exhibited an action of the "muscarine" type and had for its aim the isolation of the muscarine-like substance and the elucidation of the chemical structure of true muscarine. In addition to identifying the principle in question as acetyl-choline, Dale showed that "so-called synthetic muscarine" is identical with the choline ester of nitrous acid which, in common with various choline derivatives and choline itself, possesses most of the actions of true muscarine and an effect of a different type—the so-called "nicotine action." The former

* Paper read before the N. Y. Branch of the A. PH. A., Jan. 11, 1937, by C. R. Addinall, PH.D., Director of Library Research, Merck and Co., Inc.

action may be summarized, with certain qualifications, as a reproduction of the effects of stimulating cranial and sacral autonomic nerves—effects which are all abolished by small doses of atropine and which are unaffected by nicotine. Nicotine action may be summarized as a stimulation followed by paralysis of autonomic ganglia throughout the body. The action is abolished by large doses of nicotine and is unaffected by small doses of atropine. Since the nicotine-like action of the quaternary ammonium bases such as hordenine methiodide has been known since the pioneering work of Crum-Brown and Fraser in 1868 it was not surprising to find choline and its derivatives possessing an action which resembles that of nicotine and, to some extent, curare.

As was pointed out by Dale it is possible to imagine a series of bases, ranging from muscarine to hordenine methiodide, these end members having pure muscarine and pure nicotine action, respectively, and the various choline derivatives ranged in a series as intermediate terms according to the relative intensities of the two types of action. Thus, the derivative acetyl-betamethyl choline, $HO.N(CH_3)_3CH_2CH(CH_3)OCOCH_3$, studied by Reid Hunt and later investigated pharmacologically by Simonart, has a powerful muscarine effect, but little or no nicotine action. It is thus very well suited for clinical use and has since been tested by various investigators and found to be more satisfactory as a vasodilator than acetylcholine. The ethyl ether of beta-methylcholine, $HO.N(CH_3)_3CH_2CH(CH_3)OC_2H_5$, has also powerful muscarine and feebly nicotine action, but is not so well suited for clinical use as acetyl-beta-methylcholine. As noted by Reid Hunt there is some evidence that acetyl-beta-methylcholine is potentiated by eserine, and this potentiation has since been attributed to the inhibition by this alkaloid of the specific esterase present in the blood stream which catalyzes the hydrolysis of the ester.

Acetyl-beta-methylcholine chloride was first prepared and made available in the pure form as the chloride, $Cl.N(CH_3)_3CH_2CH(CH_3)OCOCH_3$, by Major and Cline. It is a fine white crystalline substance which produces effects similar to those obtained by stimulation of the parasympathetic (vagus) nervous system. It contracts the pupil, slows the heart, lowers blood pressure, constricts the bronchioles, stimulates the activity of the sweat glands and of the secretory glands of the gastro-intestinal tract, increases intestinal tone, stimulates peristalsis, contracts the detrusor muscle of the bladder, relaxes the bladder sphincter, and dilates all blood vessels of the peripheral vascular system. On account of its greater stability in body fluids and its freedom from nicotine-like action, it is a much more effective remedy clinically than acetylcholine. It has been used in a wide variety of diseases such as paroxysmal tachycardia, Raynaud's disease, varicose ulcers, etc.; for the relief of pain in rheumatoid arthritis and in other conditions in which parasympathetic stimulation is indicated. Quite recently Myerson has shown that it remarkably stimulates the production of mucin, regularly increases gastric juice secretion and inhibits the production hydrochloric acid and pepsinogen, thus producing a copious alkaline gastric juice.

The actions of carbaminoylcholine were first studied by Kreitmar and later by Nöll and Velten. It is at least as acetyl choline in various kinds of tests. Its action on blood pressure was stated to be much greater than that of acetylcholine, but this was not confirmed by Ghang and Gaddum, who found, in several experiments, that the effect of carbaminoylcholine on the blood pressure was slightly less than that of acetylcholine. In any case carbaminoylcholine is much more stable than acetylcholine, and is effective when given by mouth. Tests applied by Kreitmar, Nöll and Velten were mostly tests for muscarine activity. Feldberg has shown that carbaminoylcholine also has nicotine-activity similar to that of acetylcholine.

The problem of muscarine, initiated by Schmiedeberg and Koppe more than half a century ago, is one of great chemical and pharmacological interest. These workers succeeded in isolating from the fly agaric (*Amanita muscaria*) a deliquescent syrupy base with very powerful physiologic properties, arresting the frog's heart in diastole in very small amounts, an action which is antagonized by atropine. From an analysis of the aurichloride, Harnack in 1876 assigned to muscarine chloride the constitution of a hydrated aldehyde, $Cl.N(CH_3)_3CH_2CH(OH)_2$. Nothnagel's later work corroborated this formula. A complication arose when Berlinerblau and E. Fischer independently synthesized the chloride, the corresponding betaine aldehyde, $Cl.N(CH_3)_3CH_2CHO$, (anhydromuscarine chloride) which was shown by Hans Meyer to have physiologic action quite different from those of natural and "synthetic" muscarines. Attempts at synthesis by Schmidt and Bode (1892), Nothnagel (1893), and Ewins (1914) failed to produce a quaternary base having a muscarine action similar to that of natural muscarine, *i. e.*, devoid of the nicotine-curare type of action.

Accordingly, in 1922, King undertook the isolation of the potent principle of *Amanita muscaria* by making use of its solubility in absolute alcohol and its immunity from precipitation by precipitation by basic lead acetate or colloidal iron. From twenty-five and a half kilos of fresh mushrooms collected in the birch woods in the neighborhood of London in October 1921, he succeeded in isolating 0.4 Gm. of muscarine chloride with an activity greater than any previously reported product, 0.002 mg. stopping the frog heart in diastole. The substance had a molecular weight or equivalent weight of the order of 210 while that of choline chloride is 137, and, consequently, muscarine is not of the same order of simplicity as choline and in that there is no evidence for the accepted formula with one atom more than choline, King came to the conclusion that it must be classed with the alkaloidal bases of great complexity. Its stability to alkali shows that it cannot be a choline ester and it appeared to King that there is no satisfactory evidence that it is a quaternary base.

The problem was taken up anew by Kögl, Duisberg and Erxleben in the laboratories of the Universities of Göttingen and Utrecht. These workers, taking advantage of the properties of Reinecke's acid, recently introduced into organic chemical procedure, were able to isolate 3.5 Gm. (about $^1/_{10}$ oz.) of muscarine from 1250 kilos (approx. 1 ton) of mushrooms collected by school children and forest workers. The pure product had enormous muscarine physiologic activity and, chemically, proved to be a saturated aldehyde which on Hofmann degradation yielded trimethylamine and alpha-beta-dihydroxy valeric acid. This suggests the formula, $HO.N(CH_3)_3CH(CHO)\text{-}CH(C_2H_5)OH$, for muscarine. It seems strange that the old workers, with their analyses of impure preparation, should have come so close to the correct conception of muscarine and should have recognized its trimethylammonium structure and aldehyde nature. The overwhelmingly important rôle played by the alpha and beta substituents is emphasized by the confusing fact that if Kögl's formula for muscarine is correct then curare-nicotine like action is not inevitably the physiologic effect of quaternary ammonium bases.

Quite recently Bonnett and Major of the Merck Laboratory have attempted the synthesis of muscarine on the basis of Kögl's formula. Starting from alpha bromovaleraldehyde diethyl acetal they succeeded in obtaining the diethyl acetal of one of the structures postulated by Kögl. This acetal had no muscarine action, and all attempts to hydrolyze the acetal failed.

To their intense therapeutic importance, their manifoldly complex dual physiological nature, the sensitivity of their esters to enzyme action, the profound modification brought about by substituents in the alpha and beta positions and the difficulties inherent in the isolation of the various members from natural sources may be attributed the fascination of chemical and pharmacological work in the field of the choline compounds. The renewed interest of the last few years has already been rewarded by the discovery of specifics which are, undoubtedly, the precursors of still more ideal therapeutic agents.

NORTHERN NEW JERSEY.

The Northern New Jersey Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION met at Rutgers College of Pharmacy, January eighteenth. The guest speaker was Chairman J. Leon Lascoff, of the Committee on the Recipe Book.

Dr. Lascoff spoke on the subject "Ophthalmic Prescriptions and Prescription Incompatibilities." He stressed the advisability of having a section of the prescription department set aside exclusively for this type of prescription. For this department the chemicals should be selected with especial care. The mortars, graduates and other apparatus should be reserved for use in this section only.

The speaker exhibited a number of prescriptions which had been compounded as written, and again compounded in such a manner as to present the medication in a more uniform and more pleasing appearance. The command of the physician, "take thou and make according to the art" is more than ℞ ft. *S. A.* to the pharmacist who has a little above the average knowledge of the art, and a desire to use a little common sense.

The display of the many files of correspondence involved in the revising of the first edition of the Recipe Book illustrated the painstaking care that Dr. Lascoff has exercised in attempting to make the Second Edition of this invaluable book even better than the First Volume.

Prof. A. F. Marquier and R. W. Rodman reviewed the progress of state and national legislation regarding bills concerning the pharmacist.

CYRUS L. COX, *Secretary.*

PITTSBURGH.

Those who were able to attend the January meeting of the Pittsburgh Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION enjoyed to the full the scholarly presentation of Dr. James D. Heard, on the subject "Ancient Drugs in Ancient Bottles."

He sketched centuries of Ancient Medicine and Pharmacy, and devoted particular attention to the history and discussion of some of the ancient medicines, their development and decline, not forgetting to stress those, though sometimes worthless, that are still found in American Drug Stores, or in the market places of the European and Oriental World.

Doctor Heard stressed the part which fancy played in the development of remedial agents, how the "Doctrine of Signatures," held in such high esteem, because of the thought that each plant advertised with it, in its form and shape, its goodly virtue from the organ of man it resembled.

He considered the origin of the Theriacs, so prominent as antidotal agents in an age when the taking of a human life was common practice. How the formula became more and more complex as each succeeding Physician or Pharmacist added thereto another favorite drug. He referred to the sacred sealed earths of Lemnos and Malta, their sophistication, and their supposed value. So highly were their virtues told, that even Galen, succumbed to its lure and used it in his practice.

The weapon ointment, that cured the wound by applying the healing potion to the weapon or "a reasonable facsimile" that caused the injury. The bezoar stone with its reputed value, and the horn of the fabled unicorn, were interestingly presented.

The hiera picras of 500 years ago: the sympathetic powder—the moss from a dead man's skull—the mandragora, that many an author describes so realistically, and we marvel at the credulity of benighted gatherers who believed the root emitted an almost human shriek as it is pulled from the ground.

He pointed out facts concerning Digitalis, especially Withering's noted contribution. Doctor Heard has among his collection a first edition of Withering's "Writings on Digitalis."

These together with numerous slides to illustrate ancient drugs and containers, and inspired pictures, served to interest and entertain all who attended.

FRANK S. MCGINNIS, *Secretary.*

CITY OF WASHINGTON.

The monthly meeting of the City of Washington Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held February 8th, in the Assembly Room of the AMERICAN INSTITUTE OF PHARMACY. President W. Paul Briggs presided. The minutes of the January meeting were read and approved. Treasurer McCloskey acknowledged receipt of the Branch's funds from former Treasurer H. C. Fuller.

President Briggs introduced Secretary E. F. Kelly, of the AMERICAN PHARMACEUTICAL ASSOCIATION, who spoke on "Local Branches." He outlined the history and functions of Local Branches and stated that the Branches should not interfere or conflict with work undertaken by State Associations.

"This Branch," stated Dr. Kelly, "can be of great assistance to the State Associations, other Local Branches and all other pharmaceutical associations. Washington being the capital and the home of the different departments and bureaus of the Federal Government, invaluable information relating to pharmacy can be brought together and the news promulgated to the pharmacists of the United States."

"Pharmacy being a public health profession should be interested in all public health problems and its members should coöperate with other public health agencies in matters affecting the health of the public. The pharmacists should make the facts known and should make the public conscious of the work done by this profession."

Secretary Kelly's interesting address was well received.

President Briggs introduced the next speaker of the evening, Paul T. Rees, Chief Pharmacist, United States Naval Medical School, who offered a paper on the "Study of Emulsions." He gave the history, theory, use and manufacturing of extemporaneous emulsions. He presented his paper in a most interesting manner with the aid of exhibits and micro-photographs.

In discussing four methods of manufacturing emulsion of Cod Liver Oil and testing these clinically, Mr. Rees gave the following results: Type "A" emulsion, made by a very inexpensive

Homogenizer, administered to adult male, a Doctor of Medicine: Palatability, excellent; regurgitation, none; miscibility, all traces of emulsion removed from the mouth by drinking water.

Type "B" and "D" emulsions made by hand and Mix Master: Palatability, taste of oil; regurgitation, four to six hours after administration; miscibility, water failed to remove all traces of emulsion from mouth.

Type "A" emulsion, administered to a child, twelve years of age and to a child nine years of age, same result as Type "A."

Types "B" and "D," administered to children: Palatability, taste of oil, claimed nausea, and refused further administration.

In his summary, Mr. Rees stated, "In comparing the time of manufacture and stability of the finished product, the 'Homogenizer' produced the best emulsion and required only eight minutes to manufacture. The 'Mix Master' required but eight minutes to manufacture, producing a satisfactory product for immediate use, but showed stratification in one week. The hand-made emulsion required sixteen minutes for manufacture and produced a product satisfactory for immediate use but showed stratification after one week. The milk shake mixer proved unsatisfactory, since no emulsion was formed after sixteen minutes of stirring."

"Conclusion—The practice of using the ever-handy milk shake mixer for manufacture of extemporaneous emulsions is emphatically condemned. For the manufacture of a satisfactory emulsion the following methods are recommended in the following order, based on their stability: Homogenizer, Mix Master, and Hand Made."

The paper was well received. Mr. Lee moved that the paper be accepted; motion was seconded and passed.

Secretary Kelly suggested that Mr. Rees give his paper at the annual meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION.

After thanking the speakers for their splendid presentations, President Briggs gave a tentative program for the March meeting.

V. B. NORELLI, *Secretary.*

After the regular meeting, President Briggs called a meeting of the executive committee for the purpose of considering an amendment to the By-Laws in reference to the date of the meetings.

It was moved by Mr. Howes and duly seconded, that the members of the Local Branch vote on the following proposed amendment to the By-Laws:

"The meetings are to be held on the *third* Monday in each month, and all pharmacists and others interested in the development of Pharmacy are invited to attend."—Passed.

The Washington, D. C. Branch of the A. PH. A. will meet at the AMERICAN INSTITUTE OF PHARMACY, Monday, March 15th, at 8:00 P.M. The contributors to the program are: L. E. Warren, S. L. Hilton, John W. Lee and Frank A. Delgado.

Their subjects are, in the order of the names given:

1. "The Association of Official Agricultural Chemists and Their Work on Drug Research."
2. "Some Features of the Pharmaceutical Recipe Book II Exhibit."
3. "Methods of Capsule Filling, Comparison of Accuracy, Speed and Other Factors."
4. "Significant Facts Concerning Pharmacy Contained in the New U. S. Census Distribution."

Miss Esther H. Barney, who was in charge of the pharmacy exhibit at the Century of Progress Exposition through both summers of its operation and in charge of the pharmacy exhibit at the Texas Centennial, was in Washington to confer with the Public Health Service relative to the exhibit in Dallas. She also visited museums and exhibits in Washington for gaining further information on the subject. Her work has been eminently successful in making pharmacy better understood by visitors. While on her visit, she extended this to nearby Virginia where her grandfather, well up in the 90's, resides.

It is expected that the exposition in Dallas will be Pan-American and that the Mexican Government will have an exhibit in the Hall of the Latin Americas now under construction for the exposition.

COMMITTEE REPORTS

PHARMACY WEEK COMMITTEE AWARD.

Chairman Anton Hogstad, Jr., of the Pharmacy Week Committee has rendered the report of the Pharmacy Week Window Display Contest Committee. The Committee selected to judge the National Pharmacy Week Window entries discovered that it was rather a difficult task to arrive at the following decisions:

Group I.—Grand Prize, Federal Wholesale Druggists' Association Trophy (Robert J. Ruth Memorial), to Morgan & Millard of Baltimore, Md., with a window entitled, "Life in Balance."

The forepart of the report is used for the legend underneath the picture of the display. The remainder of the report follows, in the order given by the Committee.

The following window exhibits were judged to be worthy of special mention and will be awarded merit certificates as presented jointly by the AMERICAN PHARMACEUTICAL ASSOCIATION and National Association of Retail Druggists.

1. "Mercury from Oregon Mines" entered by Frank Nau's Pharmacy, Portland, Oregon, represents one of the best professional exhibits that has been judged in the National Pharmacy Week contest in many years. The designer of this window should be complimented and encouraged to continue along similar lines in the future. It illustrates, very concretely, what anyone can do with a very common chemical in creating interest among the allied professional groups, and in educating the laity concerning some phases of pharmacy.

2. The window entitled, "The Pharmacist's Professional Relationship" exhibited by the Professional Pharmacy, Minneapolis, Minn., presents a very simple, but dignified and professional appearance. The use of the self-explanatory picture, and the judicious arrangement of books and mortars gave the window balance and harmony. The medicinal plant and antique crude drug grinder created enough interest to make the window attractive.

3. The interesting window entered by Baker Pharmacy, Oakland, Calif., entitled "A Prescription Explained" is worthy of special mention. Although the subject was not original, it was the best balanced window in the contest. Attractive, educational windows of this type will give the public a greater understanding of the services which a pharmacist renders.

4. Don Whitehead's window, "Pioneer and Modern Pharmacy" merits distinction because it emphasized the professional services which have been rendered by a pharmacist to his community for almost half a century. As one of the signs read, "He dignifies and honors his profession," we feel that Mr. Whitehead is also honoring his profession with windows of this character. He is connected with Don Whitehead, Drugs, Boise, Idaho.

5. The Committee felt that Harry Kesselman's window was worthy of special mention because of the particular emphasis given to compounding. . . .

Without any particular remarks the remaining five windows were judged worthy of special mention in the order named. 6. John A. Klingstedt, Rockford, Illinois—Prescription Window. 7. Service Pharmacy, Washington, D. C.—"Drugs from the Far Corners of the Earth." 8. Emil Cermak, Omaha, Nebr.—"What Do We Buy from Spain?" 9. Hall's Drug Store, Hopkinsville, Kentucky—"Your Pharmacist Stands Out." 10. Weber & Judd, Rochester, Minnesota.

Group II.—"Colleges of Pharmacy." The prize consists of a beautiful banner and suitable standard which will be awarded by the AMERICAN PHARMACEUTICAL ASSOCIATION.

In judging the windows of the second group, the Committee found it difficult to make a decision. After much discussion, the first place was awarded to Temple University for the window entitled, "The Story of Cinchona." The Committee realized that the subject was not original, yet they awarded the prize because they felt that all the other nine points were more closely fulfilled.

The Committee wishes to recommend that the Rhode Island College of Pharmacy and the University of Minnesota be awarded special mention for two very exceptional botanical windows.

Group III.—"Pharmaceutical Associations." The prize consists of a beautiful banner and suitable standard which will be awarded by the AMERICAN PHARMACEUTICAL ASSOCIATION.

Although there was only one window entered in *Group III*, the Committee felt that first place ought to be awarded to the Philadelphia Association of Retail Pharmacists in view of the fact that they showed sufficient interest to prepare an exhibit for National Pharmacy Week.

(Signed) National Pharmacy Week Window Display Contest Committee: E. J. Ireland, *Chairman*, University of Florida, School of Pharmacy, Gainesville, Florida; Joseph M. Bransky, Bureau of Narcotics, Federal Bldg., Jacksonville, Florida; A. W. Morrison, Morrison's Pharmacy, Miami, Florida; William Emrich, Emrich's Pharmacy, 33 W. Church St., Orlando, Florida; C. G. Hamilton, Hamilton's Pharmacy, Pompano, Florida.

PRIZE WINDOWS OF GROUP II AND GROUP III.

Group II.—"Colleges of Pharmacy."—Entered by Temple University, School of Pharmacy, Philadelphia—see Committee Report.

Group III.—"Pharmaceutical Associations."—Philadelphia Association of Retail Druggists—see Committee Report.

THE CONFERENCE OF PHARMACEUTICAL ASSOCIATION SECRETARIES.

ABSTRACT OF THE MINUTES OF THE SESSIONS HELD AT DALLAS, TEXAS, AUGUST 26 AND 28, 1936, ADOLPHUS HOTEL.

The First Session of the Conference of Pharmaceutical Association Secretaries was convened by President J. W. Slocum, August 26th, at 2:00 P.M. The first order of business was calling of the roll, the Chairman requested each attendant to give his name and the state represented.

R. L. Wilson introduced Secretary Z. O. Moore of Georgia Pharmaceutical Association; then followed:

W. J. Danforth, Texas; Alice E. Garvin, Connecticut; Charles D. Lawton, J. W. Slocum, Iowa; Robert S. Lehman, New York; J. Lester Hayman, West Virginia; Gustav Bachman, Minnesota; Kenneth Jones, South Dakota; S. H. Dretzka, Wisconsin; H. M. Henry, Michigan; W. F. Sudro, North Dakota; Elbert R. Weaver, Oklahoma; Rowland Jones, Washington, D. C.

President Slocum announced that quite a number were in Dallas from other states, who would come in later.

J. Lester Hayman was called upon to act as secretary. The reports of the secretary and of the treasurer were read by J. Lester Hayman. The reports follow:

REPORT OF THE SECRETARY.

BY CARL G. A. HARRING.

Mr. President and Members:

Another year has passed since your secretary rendered a report of the year's activities (or should I perhaps say inactivities), and again, through circumstances beyond my control I must submit to the necessity of rendering this report through a third party.

Much to my sorrow and disappointment there is not a great deal to include in this report, for although both your president and your secretary have endeavored to get some action all along the line, it seems that even though fifty per cent of the secretaries of these United States are sufficiently interested to pay the modest dues of our conference, very few of them have the time to take their pen in hand and forward expression or advice upon subjects that properly could and should be submitted to their judgment.

During the past year your secretary sent out two letters supplementing two letters by our President, and three members were sufficiently interested to submit questions for discussion at this meeting. It is, however, not my intention to use this report as a medium for fault finding—it is my duty to point out what might be done to make this office a power for good through helpful suggestions. I can think of no better way than for the secretary's office to issue a quarterly bulletin to all secretaries, such bulletin to contain suggestions for service improvements and pertinent news of association activities, such items to be contributed by the members themselves. Mark well—if this plan is to be of any use, it must be borne in mind that each and every secretary should send in his contribution, no matter how short, once in three months. If such a system were in force we might perhaps in time be able to arouse the membership of our state associations to realization of the importance of a secretaries conference.

If we have accomplished nothing else, I feel that the practice of exchanging publications has been of considerable benefit to those who make it a point of reading their pharmaceutical journals, and personally I would feel lost without the contact that these publications activate during the year, and the many valuable points of information which they offer.

During the N. A. R. D. convention at Cincinnati an impromptu gathering of secretaries met at dinner and discussed in a non-official manner some of the topics of the day; while not officially recognized as a meeting of our organization, cognizance was taken of opinions that were brought out during the post-prandial discussion, and the groundwork seems to have been laid for a better understanding with the junior national organization.

Again let me say that I greatly regret that it is not my privilege to be present at this gathering of my brother secretaries and to express my hope that another year may see all of us re-united.

TREASURER'S REPORT, AUGUST 24, 1936.

BY CARL G. A. HARRING.

January 1, 1935, Cash on hand	$269.84	
Dues received from 9 members at $5 each	45.00	
Dues received from 14 members at $3 each	42.00	
		$356.84
Expenses:		
Not previously accounted for:		
October 8, 1934, Printing and mailing (by President McCullough)	$ 25.55	
Jan. 10, 1935, Mimeographing and mailing	$ 5.00	
February 1935, Mimeographing and Mailing	$ 6.00	
April 19, 1935, Expenses of Professor Wilson (Attendance, Washington)	$ 55.00	
Expenses of Professor Hayman	$ 6.00	
October 1, 1935, Postage	$ 6.00	
Mimeographing	$ 2.50	
Mimeographing	$ 2.50	
	$108.55	
		108.55
On hand, December 31, 1935		$248.29

LET'S STOP KIDDING OURSELVES.

BY CARL HARRING.

Our Secretaries Conference has been in existence perhaps a half score of years—it is supposedly composed of the best practical minds in organized pharmacy, yet—sad to say—the practical results of our gatherings have been negligible. If I, in my humble way, were to offer an opinion as to the why and wherefore of such a state of affairs I would offer two reasons, each depending upon the other, namely: The small attendance at our meetings, and the lack of contact between the members.

There should be no necessity to argue the benefits to each and every member of such meetings as this organization affords; still less should there be any necessity of arguing the benefits that would accrue to the state associations through the secretary's participation in these conferences.

We secretaries are evidently poor salesmen or we would have sold this idea to our respective associations long ago; I am perfectly sincere when I make the assertion that a state association can make no better investment of a small part of its funds than by sending its secretary to these conferences where he may study at first hand practical ideas of his secretarial confreres and at the same time, perhaps, give them the benefit of his own experience—all for the ultimate good of association activities. But in spite of the obviousness of this procedure, a careful search of the reports of various annual meetings of different state associations fails to disclose any mention of our conference or of the desirability of maintaining and increasing the secretary's efficiency through annual contact with others who are giving their best efforts to the orderly maintenance of organized pharmacy. I would even have the temerity to suggest that the AMERICAN PHARMACEUTICAL ASSOCIATION has never sufficiently impressed the importance of this conference upon the membership at large.

What, then, must we do to make this conference a one hundred per cent proposition? The answer, in my opinion is: Propaganda and Coöperation. It should be the particular care of each secretary to impress upon his officers and executive committee the value of these gatherings

and the practical benefits to be derived from them, in such a manner that the membership will be made cognizant of the wisdom of paying the expenses of the secretary to attend these meetings. It should and must also be a part of the secretary's duties to maintain contact through the year with other members through the medium of a bulletin issued at regular intervals by the secretary of the Conference.

If the questions of attendance and contact can be solved, I firmly believe that our feet will be set on the straight path to constructive work for pharmacy in general, but more particularly for organized pharmacy.

The reports, on motion duly seconded, were adopted. Suggestions made in Secretary Harring's report were discussed.

Secretary Sudro stated that North Dakota adopted a new set of by-laws, and they provide that the secretary of the Association is delegated to represent the Association at the Conference and, therefore, a representative from North Dakota may be expected at each meeting.

President Slocum hoped for like action from other associations. He suggested at a meeting a year or two ago that letters be sent out by the president of the Association of Conferences to the presidents and authorities of the various state associations to impress upon them the necessity and value of sending your secretary to the Conference meetings. Just how much has been done he did not know, but through Secretary Harring's office, and his office during the past year, letters have been sent to the secretaries of the associations, advising them to be represented at this meeting. They endeavored to impress the Executive Committee to send their secretaries for the benefits they might have for the associations.

He asked for suggestions. Secretary Lehman thought communications sent to the president would be more effective, because New York association does not pay the expenses of the delegates. If the president would recommend such action in his message, it would be very good.

President Slocum suggested action accordingly at this meeting, that hereafter the president of the Conference of Secretaries be instructed to write letters to the presidents of the various state associations and bring this matter to their attention.

Secretary Lehman thought it would be a very good idea, and that it would be effective.

A motion to that effect was made by Secretary Lehman and seconded by Secretary Brite.—Carried.

J. Lester Hayman presided while President Slocum addressed the Conference. He said in part:

ADDRESS OF THE PRESIDENT.

BY J. W. SLOCUM.

"I extend to you the greetings of my own, the Iowa Association, and express my appreciation of the honor you have bestowed upon me. I do appreciate it.

"I have been very much interested in this organization from the very beginning, because I saw tremendous possibilities in improving the working plans of the various associations whose members are represented in this organization. To my mind, a meeting of secretaries is very important. There are many problems we face; each of us, in our state associations. Many of them are common to all states, but some of us have particular problems, perhaps, that other states may not have, but they are nevertheless important, and here is a good place to find out about those plans and problems and discuss them with the view of improvement. When we face these problems, we know that others face them also, and we would like to know whether we have solved the problems or not in the best possible way. How others have solved them is the important thing for discussion in this meeting, if we are to get any good out of it. Naturally, we will form some contacts that are necessary; in other words, we must have such contacts if we are to accomplish and secure from our brother secretaries the information that would be of most benefit and profit to us.

"When I thought of this after my election, I tried to outline what would be the most profitable method to accomplish this, and without any criticism from any former officers of the Association. They have all done their duty as they saw it. I have tried to figure out in my own mind what would be the best way to conduct a meeting of this kind, to bring the greatest benefits to the individual members, so I formulated a letter and sent it out to each of the state secretaries, outlining about the same things I have said to you just now—that it is the evident purpose of this organization to gain from one another information that will be valuable to us in the future work of

our organization. I said in that letter I believed an open forum discussion of these problems would be of more value to us than stereotyped papers written in advance and delivered at this meeting. These papers, good within themselves, and intended to be of benefit, are perhaps not upon the subjects in which most of us are interested particularly. For that reason I advocated an open forum without any pre-written papers to be delivered at this meeting. The replies I received were limited; some fifteen or twenty, but they were absolutely unanimous in agreement that it would be the best method, as they saw it, to conduct the meeting and get the most out of it. So, with that as my authority, I planned for this session the somewhat unusual method of getting this information to you. In other words, we have an organization designed to secure information that each of us has, but have never provided a method by which that could be delivered to the other members present. We have conferred individually in groups of two or three, but we failed in these meetings to get the information that we want. I hope, if we have time in these two sessions particularly, to bring out a vast amount of information that will be of service to you. It may not meet with the entire approval of all, but we will have to take that chance. I am going to call this meeting, or rather this method of conducting the meeting a certain form of inquisition; it will cover the problems that we are facing in our ASSOCIATION work.

"The question, for instance, that was suggested in the JOURNAL with reference to Fair Trade Acts. All of the states are very much interested in them, and we hope to cover in our quizzing, some of this information relative to that, and whether or not the Fair Trade Act is ultimately the solution of price stabilization program. *Secondly*, the importance of State Association publications. Some one has suggested a little discussion along that line, as to what the states are doing in their publications and how they are being handled. *Thirdly*, the extent to which district or sectional meetings are held in the different states, and what effect they have upon the state conventions. The reason I mention that is due in part to the size of some states and the effect of attendance when the state association meets. *Fourthly*, the problem of powerful city associations overshadowing the state associations, and their effect on the state conventions. My reason for bringing this up is, particularly, because of two personal experiences in two neighboring states in which they were kind enough to invite me to speak in these neighboring states are afflicted with that situation where they have tremendously powerful city organizations; hundreds of members do not even belong to their state associations; in my estimation, a very unsatisfactory condition, and yet it exists; these two states had an attendance of perhaps fifty or seventy-five druggists at their state conventions, when they should have had a thousand or fifteen hundred or more. They had a deplorable condition, and I attributed it entirely to the fact that powerful city organizations overshadowed the state organizations. I hope to bring out something of that in this meeting. Then there is the problem of increasing attendance at our annual conferences as well as our state conventions, and the feasibility of building up a manual of fundamentals of secretarial activities. That, I think, was suggested last year by Secretary Harring, and we may discuss some questions relative to that.

"These are only a few of the vital questions that we have suggested, and it is probable that many more may come to our minds during the course of the conference. It is not my purpose to discuss at this time, any of these problems. We will endeavor to bring up subjects in which you are particularly interested, and if we can do that, I don't think there is any question but that we can have a profitable session, and as you all indicated in your replies, it has met with unanimous approval."

President Slocum requested Miss Garvin to relate some of her experiences abroad in war-torn Spain. Miss Garvin related her experiences in Spain, but requested that her remarks be kept off the record. Appreciation was expressed to Miss Garvin.

President Slocum called on Rowland Jones for a few remarks. He said in part:

"I wish to bring you the greetings of the National Retail Druggists, but more important, to bring you thanks for the very splendid coöperation which the state secretaries have given the N. A. R. D. for the past year. If anyone had told me two years ago that such information and coöperation would have been forthcoming, I would have doubted it very much. I am happy to state that the coöperation you secretaries have given the Washington office of the National Association Retail Druggists, has been all and more than we could expect, and you were responsible in a very large measure for what success we have had. I solicit a continuation of that coöperation as the only way we can succeed in our objective. The Executive Committee of the National As-

sociation of Retail Druggists has made the Fair Trade Act its main legislative objective for the coming year, and I feel certain, and can almost predict, that with the continuation of the fine help we are getting from you, the National Fair Trade Act will become a law. I thank you secretaries and those unable to be here, for the fine way you have helped us along with our program, and the unstinting manner in which you have answered our every request."

A vote of thanks was given Mr. Jones.

President Slocum called on Secretary E. F. Kelly to present the subject of a new publication by the AMERICAN PHARMACEUTICAL ASSOCIATION. Secretary Kelly stated that R. L. Swain was delegated to present the subject and asked that the matter be deferred until Dr. Swain's arrival.

President Slocum requested Rowland Jones to report on the supplement to the Robinson-Patman Act.

He said in part: "It has been deemed advisable by the authorities for each state having a Fair Trade Act to pass a supplement on the Patman Act."

"That matter was given very careful consideration by the Executive Committee, Robert L. Swain and Counsel Levy of Baltimore. They are now working on the drafting of model rules to supplement the Robinson-Patman Act. We realize that in some of the larger metropolitan areas where many of the large manufacturing concerns are located, there is a great deal of inter-state business, and the Federal Act is involved. That model Act will be ready in a very short time, and of course will be placed in your hands immediately. I am not worrying very much more about price discrimination. Congress went on record in a very definite way and I think we have established the principle that discrimination in price is wrong. I spent two days with Wright Patman on the way down here; he is ready and waiting to act as soon as we do find anything additional which may be needed to that bill. I think our efforts in the future will be mainly to see that it is effectual and enforced. The Federal Trade Commission is determined to see that the letter as well as the spirit of this law is followed through. They are very much in sympathy with our objective. Coming back to the matter of state Fair Trade Acts, I have mentioned the plan to pass the Patman bill in the coming session of Congress. The second plan is to be followed after elections, when we know who the personnel of the coming Congress will be. States which do not have Fair Trade Acts will be requested to introduce a State Fair Trade Act in their next session of legislature. Twenty-three states have legislation which will convene in January. We can go before Congress now with the statement that fourteen states have a Fair Trade Act, which comprises sixty per cent, but we wish to have the additional advantage of being able to say that in addition to the fourteen states, that the same legislation is pending in every other state in the union. That will be a very powerful argument to use; we are going to ask every state to introduce a Fair Trade Act. It may be that some states feel hopeless at this time, nevertheless, go ahead and introduce it in your legislature, in a way to give us the benefit.

"Just a word about the Model Act that the National Association of Retail Druggists has spent much time on during the last year. Dr. Swain's committee, with the help of Mr. Levy, has been working during the past year in an effort to set up a model Act which will remove many of the things that are not entirely advantageous. Of course with the California case and the Illinois case now pending in the Supreme Court we can expect, before Christmas, a decision from that body." (The decision was reached, as is known.)

(Dr. Swain discussed various points relating to the possibilities of the decision which has been rendered by the Supreme Court.)

Some of the points brought out by him follow: "In all of the New York cases on which the Fair Trade Act was adversely ruled upon, the only pact of those decisions was to nullify the non-signer's clause. In New York, the Court, in almost expressed language, recognized the validity of the contract between the parties. This Model Act, which Mr. Jones referred to, was built around the New York adverse decisions; in other words, we anticipated the New York decision might not support the Fair Trade Act. Now the Fair Trade Act—The Model Fair Trade Act which incidentally has been adopted in Rhode Island and Virginia, will not be affected. We believe the validity of the Act will not be affected, because the principle around which it is developed is quite different from the one that Mr. Jones has in mind. If you are familiar with the briefs filed in the Max Factor case in California, and also the case in Illinois, you will find they are based upon, largely, the consent that no persons are bound by a contract unless they signed that contract,

and if you follow the case before the state courts, you will find that the court decision was largely predicated upon their acceptance of this new economic philosophy. In New York it was predicated on the old contract law, that unless you sign a contract you certainly cannot be bound by it."

Dr. Swain continued, in part: "You will find that manufacturers are trying to work out their own means of price control and stabilization, and distribution of commodities to retailers that never would have been developed had it not been for the Fair Trade Act. Manufacturers now have experience, as a result of the NRA Codes, and it is to their advantage to have their prices stabilized and have presentable peaceful conditions prevailing in the retail field. It is a distinct disadvantage to have themselves a target of discriminating practices, and they are, in other words, beginning to realize they cannot put their products across in the same manner as under the NRA code. The Fair Trade Act in California is quite the contrary. Under this Act their interests have been very beneficially served and out of this is coming an experience and a fact that they have never had before. That is largely responsible for what I think is perceptible, and that is a change in the point of view of a great many manufacturers. It has no reference to the Fair Trade law or principles except in trying to bring order in retail distribution.

"If the Supreme Court does uphold the California Fair Trade Act what should be the policy in the several states from then on? Should they attempt to secure the enactment of Fair Trade laws based upon the California Fair Trade Act, or the Model Act? That question is not easily answered, because the California Fair Trade Act is the pioneer, and is in need of a somewhat serious overhauling, which would consist mostly in terminology. I should say that the proper thing to do, is to have an Act in the various states."

President Slocum invited questions.

S. H. Dretzka inquired relative to the Wisconsin Act. The adverse decision was based upon the unlawful delegation of power; that the consumers did not have a fair representation.

Rowland Jones said, that if the Supreme Court rules adversely, the druggists would have to go back to the N. A. R. D. Model Act.

R. L. Swain said, if the Tydings National Fair Trade Act is passed, then you will no longer need your wholesaler-retailer contract, because a manufacturer in Illinois can contract with you in Wisconsin simply by mail.

Mr. Dretzka inquired whether Dr. Swain would suggest that we prepare outselves for legislation, in the face of the Supreme Court decision.

R. L. Swain replied: "Your only choice now is to go ahead and put in the Model Act. Even if the Supreme Court does reverse the decision you should be familiar with the Model Act."

The delegate from Minnesota inquired whether there was any inconsistency or contradiction in terms or in meaning between the Connecticut Drug Control Act and the Fair Trade Act?

Miss Garvin answered: "No—If you want to take the chance in your legislature, here is what the Connecticut Drug Control Act is: It applies to drugs and cosmetics; that no item can be sold at retail for less than the manufacturing price per dozen. You could not sell below that. They have even made it a criminal offense. If you do sell below that you are liable to such and such a fine and imprisonment. There is no confliction in those two laws. Bear in mind that this Fair Trade Act is a voluntary contract, the manufacturer is not obliged to enter into it. The effect of having both of these laws would be to put a separate price into effect, and to bring into your own state the benefits of the retailers' minimum price."

R. L. Swain believed that the consensus of opinion is—there are very grave doubts as to the legality of that Act; the Kentucky Drug Control Act. That is subject to exactly the view by which the N. A. R. D. Act was ruled adversely upon, and subject to the same criticism of delegation of authority. It was attempted to pass that law in New York; it passed the Senate but it lost out in the Assembly.

J. G. Beard said he was delegated, as the secretary of North Carolina Association, to get some information about what sort of a bill we should begin working on now, and get retail merchants interested in, for introducing into the next biennial session of the legislature. I want to ask Dr. Swain this: "Suppose I go back and they say, 'What kind of a Fair Trade Act shall we strive for?' Can you help me? Would you say the model N. A. R. D. Act?"

R. L. Swain said, in part: "I would answer you only to a certain extent, because I think the whole thing is tied up with the action of the Court in the California case. Your legislature

meets in January. You will be in exactly the same position as a lot of others here. I would secure copies of the Model Act and the California Act and I would study them and just see what they think about them. The Model Act is based upon what I think is established in custom and law. You have the right to refuse to sell. If you are a manufacturer you do not have to sell me, and you can refuse to sell me for any reason or no reason at all; it is strictly up to your own discretion. When the New York Supreme Court handed down a decision on that, they held, in a very beautifully written opinion that the manufacturer was within his rights to refuse to sell. In other words, the Model Act is based upon the urge to sell. The contract shall not be considered in restraint of trade in the policy of New York, by reason of the fact that the manufacturer will not sell his products to a wholesaler, who, in turn will not sell his goods to any retailer unless the retailer maintains the minimum price. The beauty of that is, that it goes back to its original source and once the manufacturer adopts that policy, his contract says that he will not sell to anyone unless the man clear down at the lowest end of that line agrees to maintain a minimum price. That is based purely on contract law. I do not see how it can possibly be attacked. I should say, to come back to your question, to submit both of these acts to your council. You have modifications of the California, etc."

Mr. Beard said: "I am very much impressed with the address Dr. Swain made before our convention this year. Virginia and North Carolina are right there together. The people think alike, and the legislators are very apt to act alike on a like question. Now, would it be well, in your judgment, to use the Virginia Act to start out? We can't pass this thing by courses, and it takes a whole lot of time to get the other retailers to join in with us, and we have got to present them with something definite so they will join in with us."

A. L. I. Winne said: "In Virginia we sold the California Act to the druggists and told them that was what we were going to introduce, and got them interested, and right at that time we had word from Mr. Jones that he would send a copy we could introduce.—That was the Model Act.

"In regard to this act, I will say this: 'You are running two chances. It may be you will find no opposition at all to the passage of this bill. In our state, the strongest proponent of this bill was the chain store group. Here comes the Robinson-Patman bill, which is enough to give the chain stores all the grief they need. It may be they will not be in favor of the Fair Trade Act. Although they supported us in Maryland, the situation has changed since that time.' "

R. L. Swain said, in part: "These Fair Trade Acts are all pretty much identical because they all deal with trade-marked commodities. Some one made the statement in the Retail Grocers Convention that not more than eight per cent of the retail grocers' trade came from trade-marked commodities. The jewelry trade is putting out trade-marked goods. We try to avoid any possibility of this becoming known as the 'Druggist Bill.' We are telling them what road to travel. We worked with the grocers, confectioners and even truck companies, but the results were that we kept far in the background."

A. L. I. Winne: "We were the only ones that did any work on it at all, and it became known as a Druggists' Bill, and practically nobody else but druggists brought any pressure to bear. We had druggists go out and get grocers, wholesale dealers and others to place their names on telegrams. Naturally we got a lot of telegrams from other people, but it was known as the 'Druggist Bill.' "

President Slocum said: "The same thing applies to Iowa. Nobody was interested in our bill but druggists. We got the other people to make it appear to the legislature that they were interested."

Mr. Winne said further: "You don't have the manufacturer on any contract. Under the Model Act you have a contract between the wholesaler and retailer, but that is as far as it goes; you may have the good-will of the manufacturer, but in no way does that contract involve him."

R. L. Swain replied: "It involves him in this way, he starts the ball rolling by creating the interest between the wholesaler and retailer. The manufacturer does not want to enter into a contract or institute a contract, or become a part of it in any way; his job is to organize a barrage behind the line. A state Fair Trade Act is very little good without the national law, and vice versa. In other words, you have to break down state lines. It lets free and complete action take place in so far as the contractor being in one state and the contractee in the other.

"If I don't get anything over here except this, when Rowland Jones tells you to act, why act! The Tydings Fair Trade Act should be started with the other."

W. F. Sudro said: "There might be some differences of Courts and fundamentals of the states, making it possible to have a Fair Trade Act which should not have to be ammended by different states."

R. L. Swain replied: "There may be some few instances. You are going to lead into a technical discussion, and I don't know whether it is worth while. Under the common law of a great many states it has no reference to the statutory law. The manufacturer in that state may be able to contract with the retailer; in other states it is distinctly a contrary situation."

A. L. I. Winne: "We have had a law which provided that where the manufacturer made a contract to maintain a price, that contract was furnished with each article of merchandise sold that they would maintain their price, and that was upheld in the courts. Of course the difficulty was, it came up in connection with the Ingersoll Watch Company—they had each watch stamped, which bound the dealer to sell it for not less than the price it stated, and our understanding was that, it would be legal to do that way. You could get every manufacturer to stamp the price on his package with the contract—that the man selling it agrees to maintain the prices, otherwise he may not handle it; however, the difficulty is in the way of enforcing it, or not enforcing it, or in the way of getting the manufacturers to so label their products, is the thing that hurts."

R. L. Swain thought there was no need to be worried about the uniformity of the language of these state acts. The National Retail Druggists' Association committee is now preparing the A, B and C of Fair Trade legislation, in which it is endeavored to forget anything about the court of law, and everything except the A, B and C of the whole thing. This has now been prepared and is in the Secretary's Office, and it will consist of a little catechism giving the origin of the Fair Trade movements and then the question of what is the Fair Trade law? This book will be easy for anybody to read, even those who never heard of it, and if read with anything like the attention it needs, that is all anybody could expect to get. He concluded that when it is adopted and distributed, it ought to go a long way toward the breaking down of this deplorable situation.

A. L. I. Winne said: "The Committee will have to devise some way to make them read it."

Dr. Swain: "When the Tydings bill first got into Congress, an exhaustive treatment of the subject was prepared, and any objections or questions anticipated were answered. This pamphlet is suited to the purpose, without going into all the long argument and detail that most questions of this sort involve."

President Slocum referred to a condition in Iowa. "We have the exact copy of the California Act, and at the present time we have approximately eighty manufacturers signed up; it is moving along very fine at present, and quite a number of very important manufacturers are on the verge of coming into the wholesaler-retailer contract. Our attorney advised us that if the wholesaler was a distributor of the products of the manufacturer he could enter into an agreement with the retailer. We have not brought in a test case in our state, and have kept away from that purposely. In a certain town in the state a price war came on, and at once one of the manufacturers wanted to bring suit against the price cutter and test the case, but after due consideration we advised against it, and our attorney has finally decided the best thing to do is not bring the case up until after the Supreme Court decision. We think a great deal has been accomplished, simply for the reason that during the last fifteen days we have secured the promise of a certain merchandiser and price cutter in the state, to observe minimum prices. We believe that by careful work eighty per cent of the dealers can be brought under minimum prices in the State without a suit."

A paper by Rowland Jones was called for and read by him. The paper dealt with the A B C Fair Trade Legislation and this has since been published in booklet form. It is, therefore, not included here.[1]

In discussing the paper R. L. Swain said in part: "This paper Mr. Jones just read might call for a little discussion. We feel that this was aimed more or less at giving pharmacists the A, B, C and D back home the necessary information to discuss intelligently the purpose of Fair Trade legislation. The next step of the plan, if carried out, is to develop a Fair Trade manual which will be much more extensive than this and it will be aimed in a different way, and that will

[1] Any member desiring a copy of the report, as presented in the Conference, may obtain a copy from the JOURNAL A. PH. A.

be the basis of securing legislation in the states. This is to help get the bill through Congress, then we will have the Fair Trade Manual to get to work through the states. Then we will have a *Fair Trade Administrative Handbook*. This will set up the methods that have been tried out in various states to get things started. We have got a law, how are we going to get started? That has all been worked out in several states. All the experience relative to the administration of the Fair Trade Act. The purpose of this is that the more simple we make it, the better. It has all got to be done by the first of January and what we need to do now is place it in the hands of the people; the mere A, B and C's."

President Slocum remarked that this is the easiest meeting he had ever presided over. All that is necessary is to get started and the business takes care of itself. But the Fair Trade question which has pervaded the air almost exclusively, is certainly the most important thing that has come up at this meeting. We are very glad that these things were brought to our attention and that these men were here to answer some of these questions and discuss them with you.

A paper on the new publication of the ASSOCIATION was called for and presented by R. L. Swain. (See September JOURNAL (1936), pages 808–814.)

President Slocum said that the impression he has from the resumé is that the new proposed periodical is still largely professional, and is not so very different from the A. PH. A. JOURNAL as it should be in order to make it popular.

R. L. Swain replied: "I think probably, Chairman Slocum, that criticism is justified, but as was stated in the preamble, if you followed that, the commercial field is pretty well taken care of. The field that is open to us as far as a great group of pharmacists who went to develop professional work, is largely ignored. The JOURNAL OF THE A. PH. A. is a professional *Journal* which does not limit itself to retail pharmacists. I do not know what you have in mind, but I think this publication would cover all branches of pharmacy. I do not believe this would be what you refer to as a commercial publication. It would take up legislation, court decisions, rulings in Washington, and things of that sort."

President Slocum replied that he could see that, but nevertheless, he thought that is where you are going to find a lot of comment as to its being too professional.

R. L. Swain continued: "That brings me up to express my views on advertising. I believe that if this publication covers advertising that it would have its appeal to the field. When I pick up a monthly magazine I get as much real kick out of the enjoyment of advertisements as I do anything else about it. Just how this man is presenting his stuff to me. That is a great interest to me, and real money is spent in developing just what is necessary to get my attention. I believe that this publication should carry advertising; I don't mean free and open, not at all. I think there are certain types of advertising that I would want to present. What I would like to have is a sort of expression from this group. I find myself unable to present to you what I would call a finished picture, I couldn't do so at this time. It develops through experience, and as time goes on, but in general I think this report represents pretty nearly what the Committee has in mind.

"I would like to say that the report is only presented here. It hasn't had the necessary exhaustive study, and I don't think the Council has to further answer your question; the members are trying to find out what really is the possible need for the publication and then turn it over to the Committee to give it study. This study is taking more time than it should take, but there is no use in doing something that does not serve the need. They are certainly sympathetic with the idea, and we have reached the point now of arguing no longer, but first of all, how can we best do it? I think it would be extremely helpful to the Council to find out what is necessary. Before I close I will just comment on a statement made to me here to-day. A man came up to me and said that he was very much interested in the work of the ASSOCIATION and that his contact with retailer was general, 'but that he couldn't get out of the type of JOURNAL we have now, the things that he really needed.' We want to know what is honestly and earnestly needed, and then go to it. My thought about this whole situation is that you need the type of publication which is condensed. I think our discussion would illustrate what I mean. People have not time to read a lot of detail. A pharmacist is not interested in the details, but very much interested in what is going on, and what is affected in his own field. It seems to me that the retailers want to be kept up-to-date without going into a lot of detail. One man in California last year said, 'I don't detail the physicians any more, they detail me. They come in and tell me about a little article they read about the particu-

lar use of sugar, and my doctors came to me and wanted to know all about it.' He said, 'I want the kind of a publication that will keep me up-to-date.'"

J. G. Beard said a feeling was expressed in the college group this year that the present JOURNAL OF THE A. PH. A. while in its present makeup is an excellent thing, did not quite cover the field, even for teachers and college people, and they are interested in a publication of their own. From Dr. Swain's remarks I can see that much of what he contemplates would meet with the desire of the colleges. In other words, we want some information of this kind.

J. Lester Hayman stated, "If I recall correctly, the intense interest in this popular magazine of the A. PH. A. developed soon after or at our Washington meeting some few years ago, which the secretaries who are present here will recall, brought forth a good deal of discussion in regard to the coöperation that both of the National organizations could give to the state secretaries and their organizations, and one of the things, if I remember correctly, was the lack of bulletins or contacts with the secretaries or the druggists which they could offer. I believe that some one suggested at that time that the N. A. R. D. or the A. PH. A. could send out mimeographed or small bulletins, and I believe the demand for this popular *Journal* resulted from that. Another thing the A. PH. A. wants to know is how to finance this magazine, or whether it is of such a nature that the state secretaries could present it to their members to include in their membership fee a source of revenue for this *publication*."

Charles J. Clayton stated, "I have had a thought of this popular *journal* in the back of my mind, and my thought has been that the idea was to publish something that would avoid technicalities as much as possible, yet play up to our membership the advantages that would be gained by practicing professional pharmacy. Most retail druggists look upon the A. PH. A. as an organization of 'high-brows,' whose ideas and thoughts are far beyond his ability to comprehend, and frankly, when I undertake to read some of the articles in the JOURNAL, I know that a lot of my fellows understand them a lot less than I do."

A. L. I. Winne said: "I don't know how the financing for a magazine of this sort might be done in other states, but I do know that in my State our revenue comes almost entirely from the Board of Pharmacy, amounting to one dollar per year, and that one dollar per year is all consumed in the ordinary expenses of the organization; postage, printing and things of that sort, and to pay the expense of the honorary secretary attending this meeting. I have been the only delegate for a good many years except those who have come at the expense of the Board of Pharmacy, but that has been my idea; not very clearly stated, perhaps, but as clearly as I could state it nevertheless, without further preparation. It seems to me there should be something like *Popular Science*, something understandable. I do feel, however, that we should figure on some other way of financing this publication, than looking to the state associations."

W. J. Danforth agreed with everything Mr. Clayton said about the publication of the A. PH. A. "I have been a representative for a great many years. I have had considerable difficulty convincing people to become members of the organization because the average pharmacist feels that the association is an organization composed of 'high-brows' and research workers and individuals of that type, and that is one thing holding back membership in that organization. If you talk to them about magazines they want to know what they get for their membership. Incidentally, that is one of the first questions asked, 'What do I get for my five dollars?' You show them the magazine, but they say they can't use it; they are not college professors, and they can't understand it. I believe that if the AMERICAN PHARMACEUTICAL ASSOCIATION and the National Association of Retail Druggists would start and adopt some plan like the Pacific organization is tied up with some international or national office, and when the dues are collected for the state organization, include in the state organization a sufficient amount to take care of the A. PH. A. and the N. A. R. D. dues. That gives the local members the advantage of having a start, and in addition, it gives him a national tie-up in Washington in the A. PH. A., and a commercial interest in the headquarters in Chicago. I really believe that is the solution of the pharmaceutical association in the use which has been very clearly demonstrated during the last year in connection with the work the National Association has done from the tie-in of the state organization. As I mentioned, this is just my opinion, and I thought it might be of some value."

President Slocum inquired whether it is the desire of this group to take any action on this matter of a publication.

J. Lester Hayman thought that is what the A. PH. A. is trying to determine at the present

time. He said, "I know in my state I would have no trouble at all of raising my dues one dollar, if they knew they could receive this popular journal of the ASSOCIATION. I don't feel that I would have any trouble doing it. I don't know whether all of the states would have trouble or not, but I think the A. PH. A. would like to know whether the various state secretaries are sufficiently interested to take this proposition back to their members and get some definite conclusion upon it."

Charles J. Clayton said that in the paper it was stated that a contribution of fifty cents *per capita* in each state association would take care of the publication. "There are far more members of the state associations; my organization and yours together have more members than the entire A. PH. A., but with the thought that fifty cents *per capita* from a sufficient number of members would pay the expense of the publication, is it not possible that we can arouse enough interest in a proposition of that sort to gain enough additional members of the A. PH. A. to finance the publication? We certainly want their members to be members of this ASSOCIATION. They must know that there are other expenses attached to it, and I think it applies to every man in this room. I am willing to go out and sell some memberships, if I can promise those members something."

W. Irl Brite inquired whether there would be anotner meeting and would it be in order for the Chairman to make an appointment of a committee to study this proposition and bring back a resolution.

President Slocum agreed that a committee should be appointed.

E. F. Kelly thought that there was another point and that is the difficulty that any movement of this kind presents. "We should keep this thought in mind, however, that each association issues its own *journal* to its direct members. That won't disturb the present situation. This publication was thought of at one time, at least in this group, from this standpoint: that the state associations wanted something to go to all of their members. We have been trying to think of this in terms, as a service to the pharmacists on an inexpensive basis. You must know that this joint publication has been discussed in a simple term, but we are perfectly willing to do that, but I don't want you to think of this in terms of an ordinary *journal*. The present Chemical Society started off like we did, but now they find it necessary to issue three publications, and you can belong to it and take one, two or three and pay for them. They are trying to adapt their service to the various divisions of the organization. I don't know—if the association secretaries are interested in some publication of an inexpensive type that would go directly to everybody, that puts a different light on it. I think as I have said, that if it would help the situation, we would like to consider some such service as that, and that is something that could be of great assistance. The national problems in pharmacy, whether they are professional or commercial, are becoming more and more of interest to the individual man in the state, and therefore you have got to carry it to him in a reasonable and inexpensive way, and I hope the committee will not lose sight of that consideration. You may want to restrict it to a membership entirely, but whatever procedure you find most effective, keep in mind the type of publication that would interest your people. It is far from a closed matter, and I would like to see it brought to its very broadest standpoint and not be too much impressed for the time being with the immediate difficulties of the matter. We wrestled with this thing for two years, but we need your sympathetic interest and the very best advice you can give us."

Mr. Cooksik believed there is no one here thoroughly in accordance with that publication, but I believe the difficulty is, just how the publication is going to be financed. "The secretaries have their own little budgets to guard and watch, and I believe that is the thing right now that is causing the trouble; and not their failure to agree with the type of *journal* they are going to publish. I feel they are worried as to how the *journal* will be financed."

On motion duly seconded and carried, President Slocum appointed a committee to consider the matter consisting of Charles J. Clayton, Chairman, Miss Esther Garvin and J. Lester Hayman. This committee is to bring in a report at the next meeting.

President Slocum introduced R. J. Allen, of Sioux City, who was attending the meeting for the first time.

Secretary E. F. Kelly expressed his appreciation of the large attendance.

President Slocum felt that this had been a very profitable meeting. He called attention to the meeting with the Law Enforcement Officials at eight o'clock this evening, and to the next meeting of this Conference on Friday morning. The First Session of the Conference was then adjourned.

SECOND SESSION.

The Second Session of the Conference of Pharmaceutical Association Secretaries was called to order by President Slocum at 9:00 A.M., August 28th.

President Slocum called for the report of the Committee on the new publication.

The report of this committee was read at this time by J. Lester Hayman. It follows:

"WHEREAS, the Conference of Pharmaceutical Association Secretaries is largely responsible for the interest manifested by the AMERICAN PHARMACEUTICAL ASSOCIATION in providing a journal, separate and apart from the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, catering to the professional needs of the pharmacists of America, and

"WHEREAS, the Conference of Pharmaceutical Association Secretaries reiterates the need for such professional publication that the practicing pharmacist may better serve the public in his profession,

"Be it the sense of this body, in meeting assembled,

"(1) That such publication should be underwritten by the AMERICAN PHARMACEUTICAL ASSOCIATION for a period of at least one year to ascertain the reception of the practicing pharmacists of America.

"(2) That such journal should be financed by special contributions, properly supervised advertising and by such financial support that may be forthcoming from state, county and/or local pharmaceutical organizations.

"(3) That the journal be distributed to the members of state and local drug-trade and pharmaceutical organizations as indicated by lists supplied by the secretaries of such associations; the earlier issues being sent as sample copies and accompanied by solicitation of subscriptions.

"(4) That there be created a class of affiliation with the AMERICAN PHARMACEUTICAL ASSOCIATION, available to subscribers to the aforesaid journal, which affiliation shall not include the right to vote or hold office in the said AMERICAN PHARMACEUTICAL ASSOCIATION.

"(5) That the privilege of receiving the new journal be extended to present members of the AMERICAN PHARMACEUTICAL ASSOCIATION, either at the same price that is charged to the new affiliates, or without charge additional to their present dues, and

"*Be it hereby resolved*, that the Conference of Pharmaceutical Association Secretaries, through its individual members, assist in every way possible to the end that such publication shall be indispensable wherever physicians' prescriptions are filled."

The motion to adopt the report was duly seconded.

Charles J. Clayton said: "A journal does not have much time to demonstrate its ability in a year's time. I believe the cost of such a publication would be quite a sum and that the AMERICAN PHARMACEUTICAL ASSOCIATION would underwrite it for a year. We would be willing to demonstrate it if advertising could be procured to continue it indefinitely; it could not be continued without either subscriptions or advertising."

President Slocum inquired relative to the affiliation with the A. PH. A. because of the publication contact.

Charles J. Clayton said he started the draft of this resolution somewhat in this way, that the purpose of this publication, as we understood it, was for two things; *firstly*, to arouse in the rank and file in the drug trade a greater interest in the profession of pharmacy, and *secondly*, to offer them the provisions of the AMERICAN PHARMACEUTICAL ASSOCIATION to get them to come in, to give the subscribers the idea that they were affiliated with it, if not members.

President Slocum questioned the probability of such an approval.

President Slocum thought the main points of the purpose were embodied in the report. The financial end is extremely important. He continued: "It is either possible or impossible, and I do not think it is possible to put out that publication without advertising. If the ASSOCIATION wants to subsidize it and depend on subscriptions, I do not believe success is ahead of the proposition, because many of the periodicals we now receive, we are not paying anything for. Hundreds of druggists receive them year after year and never pay anything for them."

W. F. Sudro referred to a publication molded somewhat after the proposed publication.

W. Irl Brite believed "that if a magazine or professional paper along the lines of the *Readers Digest* were created that can give them all that information in a concise manner, I can go out and sell some memberships in the A. PH. A."

President Slocum said it has appealed to him for a good many years to put in a section of

this material in the regular A. PH. A. JOURNAL. If they had 15 or 20 pages inserted in the A. PH. A. JOURNAL it would be a vast improvement.

Motion was unanimously carried to approve the Committee's Report on Publication.

Chairman Slocum: Since the report of the Council requested that their paper be read here, I move that a copy of this motion be sent to the Council, and also be sent to the secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION.—Carried.

W. F. Sudro moved, seconded by M. N. Henry, that the present set of officers be elected for the coming year.—Carried unanimously.

President Slocum said he would endeavor to secure information from secretaries.

"I am going to attempt to quiz them for the first part of it, and then throw the subject open for discussion. We are met here to secure information from one another. Mr. Brite, will you act as our first witness?"

He responded in the affirmative. Questions and answers follow—"Q.," question; "A.," answer:

Q. "Mr. Brite, you are state secretary of the Arkansas Pharmaceutical Association?"

A. "Yes, and Drug Inspector for the State Board."

Q. "How are you elected?"

A. "I am elected at each session, on the floor of the convention, and appointed by the Board of Drug Inspectors."

Q. "You are elected—it is not left to the Executive Committee of the state association?"

A. "No Sir."

Q. "That is interesting to note, because there are various methods used throughout the United States for that, in fact, in my state, in order to save the situation last winter, we changed the constitution to provide a method of doing it. How many drug stores are there in Arkansas?"

A. "Six hundred and seventy-three."

Q. "How many registered pharmacists?"

A. "Approximately nineteen hundred."

Q. "They pay their dues?"

A. "They pay renewals, but not dues. We receive some twenty-three or twenty-four hundred, but the differential between the nineteen hundred and the twenty-four hundred are out-of-the-state residents who renew their Arkansas licenses."

Q. "What are your dues?"

A. "State Association dues are $5.00 per drug store, for one man in the store, and $2.00 for each additional man. A drug store permit is $10.00 per year. Our set-up is like this. I work for the Board of Pharmacy, they pay my salary. All fees collected by the association are used for the promotion of the retail drug industry in Arkansas. We only had about fourteen stores that didn't pay their permits last year. I would class them as drug stores about to go out of business, where maybe his receipts for the month were not more than $10.00. You couldn't have accomplished anything to have sued him for it, so we just forgot it."

Q. "To my way of thinking, it is extremely interesting, because I doubt if there is any other state that has the same set-up."

A. "$5.00 for the store dues, and $2.00 for each additional drug clerk, if they care to join the association."

Q. "And then you have a registration fee for drug stores?"

A. "$10.00 before they can open their store."

Q. "May I ask, is that a legal set-up?"

A. "It is a legal set-up, by an act in 1929, if they have hired a registered pharmacist, if the owner is not a registered man himself. I might say also that the state operates under fifteen pharmaceutical districts, which has a chairman, a vice-chairman and a county chairman in each of the districts."

Q. "That is extremely interesting to me and I think that situation in Arkansas is worthy of study; now let's proceed. You have an annual state convention?"

A. "Yes. The second Tuesday in June. We have had that for the last twelve years."

Q. "About what is your attendance at that meeting?"

A. "We had nearly eight hundred last year. We had the President of the United States with us that day."

Q. "And you hold that meeting in June each year?"

A. "The second Tuesday of June."

Q. "You don't have any drug expositions?"

A. "We had a drug show this year."

Q. "How did you operate that?"

A. "Separate from the convention."

Q. "Do you hold the drug show during the session of the convention?"

A. "Well, it was open, but nobody was in their booths."

Q. "The reason I bring that out is because it has become the custom to have an exposition during drug conventions, and some make the mistake of holding the convention and the drug show at the same time, and we learned a number of years ago that it was impossible to make a success of it in that manner. Do you have any large city associations in Arkansas?"

A. "No Sir."

Q. "Then the question I wanted to bring out really doesn't apply in your case. It is a very great problem in some states where they have large city associations, such as Missouri and Illinois, and I imagine in Chicago, which simply overshadow the state associations to the extent that they are of a very minor importance, and I don't like it. I think it is a serious proposition and it is going to be a big problem to bring those states in line to where they will ever have a state association. I will give you a little brief experience along that line. I was invited to speak in Illinois one year, and I think I spoke to sixty or seventy-five, but that was the average attendance at that state convention; sixty to seventy-five people, and there was the City of Chicago with several thousand members and very few of them are actually members of the state association of the State of Illinois. I was invited to speak at a state convention in Missouri one time, and at that state convention it was still worse. St. Louis has a tremendously powerful association; there was Kansas City with an organization of several hundred. They weren't in attendance right there under the eaves of their own places of business, and they have the same thing at St. Joseph, and the result was that poor Missouri had no state convention of any consequence whatever, and that is quite a problem and I think it is worthy of attention of an organization such as this. There are a lot of phases of things I haven't mentioned here, as to what these questions should be, and that is one of the questions that could readily be brought out in connection with the operation of our state conventions. There have been associations practically ruined by traveling salesmen trying to run them. Have any of you found that experience? The *Chairman* of the Travelers' Association of Iowa came to me a short time ago and said, 'Say, did Mr. Allen say anything to you with reference to our taking over some of the convention this year.' I said that I believed he had mentioned it. I was afraid of what was coming. . . . If they come to you with the proposition of putting on a program or a certain part of a program outside of the entertainments, you are stepping on dangerous ground. It has been done before."

Q. "Do you hold any sectional or district meetings?"

A. "One in each district."

Q. "That comprises the entire state; what time of year do you hold these meetings?"

A. "It takes three weeks; five meetings a week, one each night, five nights per week, at which time I would present the President of the Association, or any other outstanding speaker. It is our plan to bring a man this year to tell them something about selling, to each of these district meetings."

Q. "That is held in the spring of the year?"

A. "Yes, in the spring. Sometimes in March; sometimes in April, just prior to the convention."

Q. "Does that encourage attendance at the convention?"

A. "It most assuredly does. We had each district to send a man to the convention and make a talk; five, ten or fifteen minutes, whatever he wanted to talk about, and we had some twelve or fifteen at the convention that would not have been there if they weren't to make a speech."

Q. "You don't have a Fair Trade Act in your state?"

A. "We will have one in January."

Q. "That is fine. In your opinion is the Fair Trade Act—the State Fair Trade Act—the best method of price stabilization?"

A. "That is a hard question to answer, Mr. Slocum. I am inclined to believe that the Tydings National Act would have been a better Act."

Q. "That merely supplements the other, to prevent Federal obstructions."

A. "I think our Act is all right to start with. For the past twenty years we have had no method of price stabilization; I would say go ahead and get it."

Q. "Do you have an official publication?"

A. "No Sir."

Q. "You don't issue any official publication during the year?"

A. "No Sir. My contact is personal contact with them."

President Slocum: "I wish I could ask that question of all of you at once. Does anyone have any questions they would care to ask Mr. Brite? Have you anything, Mr. Clayton?"

Miss Ester Garvin: "Do you send out any type of communication to your members?"

Mr. Brite: "We do this; for instance during the recent elections, or rather the contest that they had for Governor, they tried to put the Association on the spot that we endorse a certain man. Then we sent a letter to every drug store in Arkansas, stating that we were not a political body. It was a matter of principle; which developed that we had a promise from three outstanding candidates for Governor that they would carry on our program, which was a Fair Trade Law."

Miss Garvin: "You don't have to address the thousands of letters that we have to address."

Mr. Brite: "That was a matter of some eleven hundred letters. We only do that when certain important things come up. We have adopted the *Southern Pharmaceutical Journal*, which goes to every drug store in Arkansas, and is paid for by the Association. That is much cheaper, and besides, how are you going to get them to read the letters you send them? For instance, we had an important bulletin sent out. I went North out of Little Rock and called on sixty drug stores and only eleven of them had opened their mail, so my Board said for me to go and talk to them...."

President Slocum: "Is there anyone here that has any other method of electing your secretary than on the floor of the convention?"

J. Lester Hayman: "I do. All of our officers are nominated by the Nominating Committee appointed by the president, which must consist of past-presidents. No one can serve on the nominating committee except past-presidents; the nominating committee consisting of five members. They must submit a list of two candidates for each office, which is not voted on at the convention, but the secretary is obligated to send this as a mailed ballot within thirty days after the convention. The date is put on this ballot and then sent in within thirty days after the ballot was mailed out."

President Slocum: "Are there any associations which elect the secretary for more than one year's time?"

M. N. Henry: "Michigan does."

W. F. Sudro: "We have been considering a five-year term, to assure a man of some tenure in office. Mr. Chairman, with reference to all of these questions, I suggest that the secretaries of all the associations work out a compilation of questions and bring all this stuff together. It would prove of great benefit to us all."

President Slocum: "I agree with you on that. To go on with our questioning, I will now ask Miss Garvin to be our next witness. Mr. Reporter, I would appreciate it if you will leave this off; I only wanted to get Mr. Brite's answers down to show the line of questioning, and from here on it will be a repetition of the same questions."

The same line of questioning was taken up with Miss Garvin.

President Slocum: "I will now call upon Secretary Lehman, from the largest part of the country, some questions relative to the New York state association."

The same line of questioning was taken up with Mr. Lehman, State Secretary from New York.

President Slocum: "There is something wrong all over the country. Associations are supposed to flower and grow, and how can they do it by employing men at $400.00, $500.00 or $600.00 a year. The whole picture is blurred somewhat, by that situation. I have a much better salary than that. I am getting $1500.00 a year but I have to pay expenses out of that."

Charles J. Clayton: "Our state is a comparatively small one. We have only 600 drug stores. The income of the organization is comparatively small, and comes almost entirely from turnover of the Board of Pharmacy, for each annual renewal fee. They have been talking about employing me, or a full-time secretary, paying him a salary comensurate with the work that I have done, or could do, if I could devote more time to it. I have tried to discourage the idea because I don't believe the organization could ever pay the money permanently. They might have a spasm, and after the first year find it an awful lot of money, and the first thing you know the secretary is spending most of his time trying to collect his salary. I don't believe it would be a successful enterprise if it were undertaken, and even if it were proven successful, and he got his full salary, then would enter the feature of somebody being everlastingly trying to get that job. There would be plenty of candidates for the job and the result would be, I think, disastrous. I mean to say, that where a good job is created for somebody or within an organization there is always going to be politics in an effort to get that job away from the man who has it, and into the possession of somebody else who either feels that he could honestly do a better job, or else wants the money out of it. I appreciate the fact that there are jobs in more populous states where the money could be raised without great sacrifice or effort and the jobs are of sufficient magnitude that a man ought to devote all of his time and get paid for it, but in the small states, I don't believe that is the best way; I don't believe the organization will get the results in paying large salaries."

M. N. Henry: "I disagree with that entirely. If the druggists of this country are not willing to pay sufficient dues to maintain an organization, with $10.00 as a minimum, they had better not have an organization. The druggists are not going to accomplish much until they work along legislative lines, and work out the problems as we have done. I know of no such organizations that do not have a full-time secretary or attorney; some man who knows the legislative business and gives it his full time. It is wrong for the druggists of any state to expect some druggist to get out and work for them for nothing. In Michigan, when they proposed this thing, they asked if I would leave a good bank job to take this thing over. I told them no, absolutely not, unless they would pay at least $10.00 a year dues and go at it in a business-like way so they could accomplish something. They came up, a little group from Detroit, Lansing, Grand Rapids, and so forth, with no concerted action; no one knew what to do after they got there."

President Slocum: "It is getting almost time for adjournment. Are there any other questions?"

Charles J. Clayton: "As you have threatened to adjourn at most any time, I would like to call attention to the fact that Mr. Sudro moved for the entire reëlection of the efficient body of officers now in office. I just want to say that there are certain ones in this group who are no longer state secretaries; William B. Day and R. C. Wilson, and consequently these men are not, as I see it, eligible for reëlection. As this is the case, I think that we should reconsider that vote."

President Slocum: "If there are no objections, I would like to have a motion to appoint a nominating committee of three to retire and bring in a report as to nominations."

Such a motion was made, seconded and passed.

President Slocum appointed Messrs. Clayton, Sudro and Kenneth Jones.

President Slocum: "I would like to have an expression—how do you like what you have done today?"

A general expression prevailed that the method had been successful.

President Slocum: "I think that one of the greatest menaces we have got to face in the future is coöperatives; look out in the future for the coöperative selling organizations. They are going to do more to eliminate the independent dealers than anything else."

W. Irl Brite: "I understand that the big one in St. Louis is operated by a Baptist preacher to take care of his flock."

M. N. Henry: "How many of us represented here do not purchase from a coöperative organization; wholesale coöperatives? We ourselves, are supporting them."

President Slocum: "You are talking about mutual companies, aren't you?"

M. N. Henry: "They are coöperatives, aren't they? If we ourselves support the same principles, we haven't much complaint."

President Slocum: "In that case it is competition for the so-called wholesalers."

The Nominating Committee reported as follows:

After long and careful deliberation we recommend the reëlection of J. W. Slocum as *Presi-*

dent; Miss Alice E. Garvin as *First Vice-President;* Robert S. Lehman as *Second Vice-President;* Carl Harring as *Secretary-Treasurer. Members of the Executive Committee:* J. Lester Hayman, W. Irl Brite, F. V. McCullough and Otis F. Cook. *Delegate to the House of Delegates,* Mr. Clayton.

A motion to elect was made and carried unanimously. President Slocum expressed his appreciation and thanked the members. He asked whether the members were satisfied with the meeting. A general expression of satisfaction prevailed.

Miss Esther Garvin: "Mr. Sudro made a suggestion that I wish we might carry out. He thought a questionnaire might be helpful and I wish to say that if it is possible, every secretary fill out the questionnaire and return it to Mr. Harring. I don't know what we would publish, but I would like it in pamphlet form of say 24 to 48 pages, because if we are going to get large mimeographed sheets it will take quite a few pages. The members of the medical association would be extremely interested in compulsory membership, and I wish to make a motion, or rather I wish that a motion might be passed or some discussion as to the method involved in getting these questions. They did not cover any method of getting them in our own state, but at least if we know in Connecticut what you are doing in Iowa, or Mr. Hayman in West Virginia, or Mr. Jones in another state, I think it would be valuable to us."

President Slocum: "In other words, to assemble all the propositions here to-day into a general questionnaire, for all the secretaries to answer. I am entirely in accordance with that, and if it is the desire of the organization I think I shall take that matter up with Mr. Harring and try with him to prepare a questionnaire to be sent to every secretary.

"The office of the association is to prepare the questionnaire and get the information on paper that you want and send those out, and then compile the results into a form available for all. That is what I have tried to do in this meeting; to try and bring out anything that might be of mutual interest and benefit to all of us. I have learned a tremendous lot by the questions that I have asked, and that you have asked this day, and I am sure that you have all gotten information you never even dreamed of. I don't know all about it, but quite a number of things developed here to-day that we never had provided a means of getting before. Is there anything further to come before the organization before we adjourn?"

W. Irl Brite: "Do you contemplate attending the meeting in Pittsburgh next month?"

President Slocum: "I am not a delegate of the N. A. R. D. and I won't be able to be there, although I have always had a leaning toward the meetings of the secretaries of the National Association of Retail Druggists."

W. Irl Brite: "Would it be possible to get Secretary Dargavel, not officially, to put in his program some day early in the meeting, a luncheon for secretaries? I know that at Cincinnati last year we ran aground—Secretary Harring was there and he was trying to arrange a meeting and we never knew when to meet, and finally had one on Friday, and most of the secretaries had gone home by then. Now, if we could just have a meeting place where we could just sit down and talk about a few things. I talked to Mr. Jones about it and he said they had previously gotten into some difficulties."

President Slocum: "There are some members of our own association that feel that this organization would be as well off if it were affiliated with the N. A. R. D., but it is a child of the A. PH. A. The N. A. R. D. is willing to work with us and encourage anything of that kind in connection with their meetings, but they don't want to promote any movement that would indicate they were over-anxious to have us."

Charles J. Clayton: "I can only say that personally, I am a member of the N. A. R. D. by sufferance; not eligible to vote or hold office. I became a member when I was in the retail drug business and am not eligible for service as a delegate, and in our organization such funds are limited, therefore, I don't feel right to ask that such funds be allocated to me. I don't feel, from my own personal standpoint that a meeting of this conference of pharmaceutical secretaries would be desirable at a gathering or conference of the N. A. R. D. I think, however, that it would be a fine thing if some kind of an informal meeting could be arranged in the N. A. R. D. meeting. Mr. Brite suggested a luncheon. I think that is a very fine idea."

President Slocum: "After they get there they simply arrange for some meeting that isn't official. The officials feel that they are rather diplomatic about the whole matter."

J. Lester Hayman: "Wouldn't it be all right for the *President* or *Secretary* to learn of

some secretary who is going to be there, and delegate him to arrange a time for the dinner, or something of that sort?"

M. N. Henry: "Such a plan would have to be carried out in a meeting wouldn't it? There is usually a conference of the state associations on finances which would include presidents, secretaries, etc."

The meeting was then adjourned.

MAKE THE NEXT 50 YEARS MORE IN FITTING WITH THE TRADITIONS OF PHARMACY.

Dr. H. V. Arny closed his address before Northern Ohio Golden Jubilee meeting with the following summary:

1. "Your druggist is more than a merchant." Prove this truth to your public by comporting yourself more like a professional man.

2. Turn back to the professional part of your store; the prescription desk and the laboratory. Recall that the decision of the Supreme Court on the ownership law included a pregnant passage to the effect that when a pharmacist is compounding a prescription he is performing professional work but when he is handing out a patent medicine of another man's making, he is a mere tradesman.

3. Use the education and the pharmaceutical skill that you have acquired from your college training to build up the professional side of your business. No man is a true pharmacist unless he is willing to consider his prescription department as the most important part of his establishment.

4. Maintain friendly and profitable relations with the physicians of this city by demonstrating your ability to compound prescriptions as they should be made. Emphasize that the prescriptions prepared by you are not only pure but are also strictly fresh.

5. Meet the menace of the prescription proprietary in tablet form by dispensing powdered drug combinations in quickly soluble capsules.

6. Have a department for eye preparations; a glass-enclosed closet where aseptic conditions may be maintained.

7. Demonstrate to dermatologists that your ointments are prepared with exquisite care.

8. Prove your ability to prepare emulsions that are fresh, attractive in appearance and pleasingly flavored.

9. Cultivate expertness in ampul filling and demonstrate this art to visiting physicians.

Finally, and above all, do not merely advertise these qualifications but demonstrate them to your medical neighbors.

Regardless of the outcome of my pet idea, a League of Prescriptionists, a qualified individual can carry out a personal campaign in this direction and will thus win the reputation of being an outstanding pharmacist.

PROBLEMS OF PHARMACISTS.

BY LEO G. PENN.

It must long ago have become apparent to the pharmacists that the patent medicine stores and other drugless drug stores are slowly, but surely, undermining that source of livelihood still left to the independent druggist, which the price-slashing chain and department stores have so far not taken from him. Their wide-spread increase of late should be a cause for concern, lest many more of the retail druggists be ploughed under.

When the chains started coming in, we expressed our dissatisfaction with mere disparaging remarks; when the price slashers came upon the scene we felt the hurt a little more keenly and squirmed a little, but now that we are being visited with the devastating results of every grocery, candy and cigar shop selling pharmaceutical preparations and proprietaries, it is high time we stood up and cried loud and often for legislative protection of our continued existence.

Such a state of affairs which is typical of the larger cities and towns at least, aside from its adverse economic effects upon the pharmacist as an individual, is more to be deplored for its inimical results to the health of the public. To note what high qualifications the state has prescribed for purveyors of medicines, and to compare this with the ease with which enormous quanti-

ties of such medicines are sold to the public in shops and by peddlers who are ignorant of what they sell, is nothing if not paradoxical.

The law provides that it shall be unlawful to sell drugs, medicines, etc., in the Commonwealth unless the person so doing be a pharmacist or an assistant pharmacist, but the effectiveness of this law is perverted by an exception thereto, which provides that the law in question shall not prevent storekeepers from dealing in and selling commonly used household drugs of proprietary medicines when the same are offered for sale or sold in original packages which have been put up ready for sale to consumers by pharmacists, manufacturing pharmacists, manufacturers of proprietary medicines, wholesale grocers or wholesale druggists under qualified supervision. It is this exception that is being abused in spirit, if not in letter, for it is hardly conceivable that the legislators intended or could foresee, when the act was passed, that practically every drug store item would be packaged and sold by non-professional people under the guise of a household remedy as the Act provides.

The fact that an Act was passed for the safe-guarding of the public health is the best indication of the fact that regulation of the sales of potent medicinal substances should be restricted to those who have had training in that particular field. The legislature also, undoubtedly, recognized that such common substances of which the laity had sufficient knowledge to be able to use without the advice of a physician or pharmacist could be sold by storekeepers. It is only reasonable to suppose that the term, household drugs or proprietary medicines, was meant to include such things as epsom salt, bicarbonate of soda, boric acid, peroxide and the like, but to-day the list of exceptions, if we judge by the stocks carried, would far exceed the prohibited items, and the exception become the rule. Such an analysis of the situation as above indicated shows the need of legislative revision either by the substitution of a new act restricting the sales of medicines in much more definite language, or else a law specifically defining the loose terms "household drugs."

CLARENCE O. BIGELOW HONORED.

A committee of the Board of Trustees of The College of Pharmacy of the City of New York, Columbia University, at a luncheon held on January 4, 1937, at the old Hotel LaFayette at 9th Street and University Place, New York, presented to Clarence O. Bigelow the following set of resolutions beautifully engrossed and bound:

C. O. BIGELOW.

WHEREAS, Clarence Otis Bigelow, for fifty-four years a member of The College of Pharmacy of the City of New York and continuously for thirty-eight years its treasurer did, by constant devotion to its interests and by masterly handling of the finances of the institution, contribute so greatly to its growth and prosperity that his achievements will be remembered as long as the College of Pharmacy shall exist; and

WHEREAS, his sterling qualities and genial personality so endeared him to his associates that it was with keen regret they learned of his decision to retire from active duty as treasurer; therefore be it

Resolved, that the members of The College of Pharmacy of the City of New York record their grateful appreciation of his important services and their sincere regret at his official withdrawal from their midst; and be it further

Resolved, that these resolutions be spread in full upon the minutes of the Board of Trustees and a copy thereof, suitably engrossed, be presented to him.

Arthur J. Bauer, Second Vice-President of the College, made the presentation for the committee.

In accepting, Mr. Bigelow expressed his gratification and appreciation of the honor and, with his rare gift of recalling the interesting events of the past, told of several of the highly momentous incidents in the history of the College.

EDITORIAL NOTES

FLOOD DAMAGE.

The loss occasioned by floods will continue for a long time and while help has been given in a general way, there is the opportunity for pharmacists to give aid to those who are near to co-workers and encourage them to carry on. It has always been true that pharmacists, even under losses, contribute to the welfare and health service of others. The N. A. R. D. is doing fine work.

PAN-AMERICAN HEALTH OFFICIALS.

The Pan-American health directors met in Washington, D. C., April 7th, when delegates representing the Latin-American countries visited the AMERICAN INSTITUTE OF PHARMACY. The proceedings of this organization have now been issued in a report of about 400 pages, containing also a number of illustrations—a group picture of the delegates faces the President; the Library and the building of the National Health Service are opposite a half-tone of Surgeon General Thomas Parran; the four vice-presidents, Drs. Sussini, Siurob, Nuñez, Lola and Secretary General Barreto and Executive Secretary Moll face Surgeon General Cumming. The Pan-American Building and the AMERICAN INSTITUTE OF PHARMACY are given an honored place opposite the message of President Franklin D. Roosevelt and Dr. Hugh S. Cumming who was president of the 3rd Pan-American Conference.

The officials took an active part in the Spanish translation of the U. S. Pharmacopœia, editorial reference was made in the April 1936, issue of the JOURNAL, A. PH. A., page 277. The report with which the ASSOCIATION was favored is the official Spanish edition; the English text of the Final Act (summary of Proceedings) has been published as Publication No. 110 of the Pan-American Sanitary Bureau.

AN ANNIVERSARY OF PHARMACEUTICAL PUBLICATIONS.

The Centennial of the United States Dispensatory is being celebrated by the issuance of the twenty-second edition. Before the first edition of the U. S. Dispensatory appeared, other dispensatories had been published, notably the American Dispensatory which made its appearance in 1806, under the direction of John Redman Coxe.

The first U. S. Dispensatory appeared in 1833, and the continuous publication of the volume marks the procedure unique in literary fields. A noteworthy fact in that connection is that the editorial management has been in the hands of one family since the beginning.

United States Dispensatory, First and Twenty-second Editions.

George B. Wood, the Great Uncle of the present Editor, Horatio C. Wood, Jr., conveyed the idea of compiling pharmaceutical information into one volume. From an historical viewpoint, and others, the editions of the Dispensatory are interesting, showing the progress and decline of drugs, in medical practice. In addition to the name mentioned, other members of the editorial staff have contributed largely to Pharmacy.

NEW AND NONOFFICIAL REMEDIES.

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.—PAUL NICHOLAS LEECH, *Secretary.*

ICHTHAMMOL.—Bitumen Sulphonatum, N. F. V.—Ammonium Ichthosulfonate.—"Ichthammol is obtained by the destructive distillation of certain bituminous schists, sulfonating the distillate, and neutralizing the product with ammonia." *N. F.*

For standards see the National Formulary under Ichthammol.

Actions and Uses.—See general article, Sulfoichthyolate Preparations and Substitutes, New and Nonofficial Remedies, 1936, p. 424.

ICHTHYOL.—A brand of Ichthammol, N. F.

Manufactured by the Ichthyol Company, Rahway, N. J. (Merck & Co., Inc., Rahway, N. J., distributor). No U. S. patent. U. S. trademark 62,603.

Ichthyol conforms to the standards of Ichthammol, N. F. VI, and in addition to the following standards: Dissolve 10 Gm. of ichthyol in 90 cc. of water, in a glass-stoppered cylinder and allow to remain undisturbed for twenty-four hours: no deposit forms. Transfer 0.5 to 1 Gm. of ichthyol accurately weighed to a Kjeldahl flask, dilute with 30 cc. of water, add 5 Gm. of potassium chlorate and 30 cc. of hydrochloric acid, evaporate the mixture to about 5 cc., add 25 cc. of hydrochloric acid, evaporate this solution to about 5 cc., again add 25 cc. of hydrochloric acid, evaporate to about 5 cc., then add 100 cc. of water; heat the solution to boiling, add 10 cc. of barium chloride solution, allow the mixture to stand twenty-four hours: the weight of the precipitated barium sulfate determined in the usual way will correspond to at least 10 per cent of total sulfur. If the ammonium contained in the ammonium sulfate as previously determined in ichthyol is calculated, and the result subtracted from the "total ammonia" as previously determined, the remainder will represent the ammonia combined with the organic sulfonic acids. If this value is multiplied by 1.88 the result will represent the sulfur present in the sulfonic acids in an oxidized state; *i. e.*, the "sulfonic sulfur." If the sulfur contained in the ammonium sulfate as previously determined in ichthyol is calculated, and the result subtracted from the "total sulfur" as previously determined, the remainder will represent the sulfur present in the organic sulfonic acids contained in the substance. If the "sulfonic" sulfur in ichthyol as previously calculated is subtracted from the sulfur in the organic-sulfonic acids as previously calculated, the remainder will correspond to at least 5.5 per cent of "organic" ("sulfide") sulfur.

RABIES VACCINE (See New and Nonofficial Remedies, 1936, p. 376).

The Cutter Laboratories, Berkeley, Calif.

Rabies Vaccine (Semple).—Also marketed in packages of seven vials, each containing 1 cc.

BACTERIAL VACCINE MADE FROM THE TYPHOID BACILLUS (See New and Nonofficial Remedies, 1936, p. 401).

The Cutter Laboratories, Berkeley, Calif.

Typhoid Prophylactic.—Also marketed in bottles of 20 cc. containing 1,000 million killed typhoid bacilli per cubic centimeter.

McKESSON'S HALIBUT LIVER OIL WITH VITAMIN D CONCENTRATE IN NEUTRAL OIL, 6 CC.—Halibut liver oil with added natural vitamin D obtained from cod liver oil and other fish liver oils. It is assayed to have a potency of not less than 59,000 units (U. S. P.) of vitamin A per gram and not less than 1,000 units (U. S. P.) of vitamin D per gram.

Manufactured by the International Vitamin Corporation, New York (McKesson & Robbins, Inc., Bridgeport, Conn., distributor). The vitamin D concentrate used is made under U. S. patent No. 1,690,091.

DIGITALIS (See New and Nonofficial Remedies, 1936, p. 168).

Tablets Digitalis Whole Leaf-Lederle, 1/4 grain: Each tablet contains 1/2 cat unit.

Tablets Digitalis Whole Leaf-Lederle, 1 1/2 grains: Each tablet contains 1 cat unit.

Tablets Digitalis Whole Leaf-Lederle, 3 grains: Each tablet contains 2 cat units.

Prepared by the Lederle Laboratories, Inc., Pearl River, New York.

PERSONAL AND NEWS ITEMS.

Henry J. Goeckel, a consulting chemist and biologist in Cranford, N. J., has been honored with the doctorate degree from New York College of Pharmacy.

Dr. Thomas Parran, surgeon general of the United States Public Health Service, received the honorary degree of doctor of pharmacy at the 116th founder's day celebration of the Philadelphia College of Pharmacy and Science. Dr. Parran spoke on "The Aims of the United States Public Health Service."

The *Lewiston Evening Journal* (Maine), of February 5th, devotes a large space to the discussion of pharmaceutical subjects in which President George A. Moulton, of the N. A. B. P. is deeply interested. The principal purpose of this gathering in Maine was to canvass support for a number of measures now before the Maine Legislature. In his address President Moulton discussed the services of Pharmacy. It is interesting to note that Governor Lewis O. Barrows was a pharmacist.

Miss Alice Noble reports **Dean J. G. Beard,** who has been in the City Memorial Hospital in Winston-Salem since Thanksgiving, following injuries received in an automobile accident, is now rapidly improving. He was able to leave the hospital on January 10th, and is convalescing at the home of his sister, Mrs. Phin Norton, in Winston-Salem.

After forty-six years of active service at the Brooklyn College of Pharmacy, **William C. Anderson,** will end a notable career as Dean of the college and Professor of Theory and Practice of Pharmacy, the Board of Trustees of the college announced last month. At the same time it was announced that Dr. Anderson would retain his connection with the college as **Dean Emeritus.**

Dean Gordon Curry (Louisville College of Pharmacy) was marooned for ten days in his home by Ohio's flood in Louisville—an evidence of the extent of flood damages.

Senator A. Spencer Feld's recent bill in New York Legislature calls for the registration of trade-marks in the state and provides that any trade-mark owner who has filed and advertised his brand name may enter into a contract for the performance of designated requirements.

New York Branch of the A. PH. A. will be host for District #2, N. A. B. P. and A. PH. A., to be held at Hotel Pennsylvania, New York City, March 8th–9th.

OBITUARY.

HENRY B. CAREY.

Henry B. Carey, member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1909, dean of the College of Pharmacy, University of California, died February 4th, following a short illness.

Dean Carey was born in Mapleton, Minnesota, April 13, 1876; he graduated from the University of Minnesota in June 1900, receiving his Bachelor's Degree with honors. He attended the Northwestern University

HENRY B. CAREY.

Medical School and, in 1905, he graduated, receiving the degree of Medicine, *cum laude*. He was a member of the Sigma Xi Scientific Honor Society and also a member of the honorary medical society, Alpha Omega Alpha and of the American Medical Association.

In 1900, Professor Carey became a member of the faculty of the School of Pharmacy, Northwestern University; in 1906, he accepted the Chair of Botany and Pharmacognosy at the California College of Pharmacy, which position he continued to hold for the past thirty years. For many years he was Instructor and Assistant Professor in Anatomy and Histology in the Dental College, University of California. In September 1932, he was elected Acting Dean of the California College of Pharmacy which in July 1934, became the College of Pharmacy, University of California.

Dean Carey attended the Portland meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, where he contributed a paper on "Educational Problems in Pharmacy." He was devoted to the betterment of Pharmacy and his passing is a distinct loss to the institution he served faithfully during many years and to the profession at large.

Dr. Carey was one of the founders of the *Pacific Pharmacist*, with former President William M. Searby, of the A. PH. A., in 1907, and for eleven years he was editor and assistant editor of that publication.

WARNING BY NEW JERSEY BOARD OF PHARMACY.

The New Jersey Board of Pharmacy is sending out warning to the effect that "sale of aspirin by general merchants in New Jersey is unlawful" and the law will be made effective April 1, 1937. "The Board will begin active prosecution of all dealers not supervised by registered pharmacists who continue to sell aspirin in any form."

Another warning is based on the following:

"The highest Court in this state on January 22, 1937 upheld the Board of Pharmacy in its contention that Duke's Magnesia Citro-Tartrate, manufactured by the Crescent Bottling Works of Newark, N. J., is a drug and medicine, and therefore subject to the provisions of Section 2 of the Pharmacy Act. It cannot legally be sold except under the supervision of a registered pharmacist in New Jersey. The same thing applies to other magnesia preparations."

Secretary R. P. Fischelis has also issued information on "An Important Court Decision" bearing on above and states:

"The New Jersey Board of Pharmacy is now sending notices to manufacturers of Citrate of Magnesia as well as to retail merchants advising that immediate action will be taken against any dealer selling Solution Citrate of Magnesia or any substitute, regardless of how it may be labeled. Citrate of Magnesia is a drug and medicine within the meaning of the Pharmacy Act of New Jersey and may be sold only under the supervision of a registered pharmacist."

OKLAHOMA PHARMACEUTICAL ASSOCIATION.

The Oklahoma Pharmaceutical Association held its annual meeting, February 23rd–25th, in Oklahoma City and a drug show in connection with that celebration.

Governor Marland and members of the Legislature were honored guests.

STATE LEGISLATION.

The Alabama Senate has passed a bill proposing to create a Board of Medical Technicians. Arkansas is considering the creation of a Chiropody Examining Board.

California proposes to regulate and control corporations organized for the purpose of coöperating non-profit hospital service.

CONNECTICUT PHARMACEUTICAL ASSOCIATION.

The Connecticut Pharmaceutical Association held a mid-winter meeting at the Hotel Bond, Hartford, January 28th. More than three hundred were present at the meetings and double that number attended the banquet and dance.

President John L. Sehl opened the convention. Following the reading of communications by Miss Garvin, the meeting was turned over to Dean Henry S. M. Johnson, chairman of the Scientific Committee. The first speaker was Dr. George E. Bolles of Danbury, a well and favorably known dentist, and a member of the druggists group. He spoke on the "Value of the Relationship of the Two Professions."

It was regretted that Dr. J. Leon Lascoff could not be present, nor Dr. George Schicks. R. W. Rodman filled the program and spoke about the "Service to the Public of the Three Professions Represented."

An Honorary Membership Certificate was presented to Sister M. Concepta of St. Francis Hospital in Hartford for outstanding work in Connecticut Pharmacy. Dean C. Leonard O'Connell of Pittsburgh College of Pharmacy spoke on "The Renaissance of Pharmacy." He stressed the point that pharmacists should maintain the dignity of their profession, that they should develop the prescription practice, and better their service.

At the afternoon meeting Thomas J. Spellacy of Hartford referred to Pharmacy as indispensable to the community. Arthur J. Rivard, State Narcotic Inspector, stated that narcotic use is increasing and reported some specific violations in Connecticut. He asked for coöperation in correcting the evil.

President Harry Berenstein outlined Fair Trade Legislation. Raymond M. Pearce of New York, spoke on "Window Displays." Wm. J. Dunphy introduced the Secretary of State, Dr. C. John Satti, who spoke favorably of Pharmacy and urged coöperation with medical societies. Attorney General E. J. Daly gave an outline of a Fair Trade Law. John C. Blackwell spoke about "Social Insurance."

Governor Wilbur L. Cross was introduced and he referred to his early days as drug clerk. He is well known for his work at Yale University, and his address evidenced his information relative to pharmacology.

Hugh P. Beirne discussed Legislation; following his address, President George Moulton of New Hampshire and of the N. A. B. P. was introduced. He commended the work of Connecticut druggists.

A banquet and radio entertainment concluded the sessions.

FEDERAL WHOLESALE DRUGGISTS' ASSOCIATION.

The Federal Wholesale Druggists' Association held an open discussion of Price Stabilization Plans. Coöperative Wholesalers and Manufacturers met with the former, at the Waldorf Astoria in New York on February 17th.

F. J. McDonough presided at the open forum together with President L. E. Seiberlich and Secretary R. E. Lee Williamson.

State Fair Trade Acts were discussed by R. E. Lee Williamson, J. L. Norton, T. E. Hicks, Harry Z. Krupp and others. The situation was summed up as one that called for patience and full and earnest acceptance of the opportunities presented by the spirit of Fair Trade legislation.

IOWA PHARMACEUTICAL ASSOCIATION.

The Iowa Pharmaceutical Association held its fifty-eighth annual convention at the Hotel Fort Des Moines, in Des Moines, February 16th, 17th and 18th.

The three-day meeting was devoted entirely to discussions of matters of interest to the trade. There was no drug show this year, so that instead of holding sessions only in the mornings, forenoons and afternoons were occupied with business sessions.

Dr. John Parsons, M.D., an official representative of the Iowa State Medical Society, was one of the speakers; Chairman J. Leon Lascoff's subject was "Recipe Book II."

Progress and Coöperation.—Soon every state will have a Fair Trade Law.—Tydings Miller bills are now before both Houses of Congress.

BOOK NOTICES AND REVIEWS.

New Jersey Pharmacy Laws and Regulations. The Board of Pharmacy of the State of New Jersey has compiled and published New Jersey pharmacy laws and regulations, with schedule of antidotes for poisons. The compilation also contains lists of registered pharmacists and assistant pharmacists in good standing, June 30, 1936, and lists of registered pharmacies and drug stores as of June 30, 1936. The publication may be obtained from Secretary R. P. Fischelis, 28 West State Street, Trenton, N. J. Margin notations make for easy references to points of law. The Regulations are conveniently arranged and explained. A list of drugs and chemicals to be dispensed only as prescriptions is given. The Prescription Law and regulation covering the compounding and dispensing of prescriptions for drugs and medicines are explained and all phases of procedures and of laws are concisely detailed.

"Poisons and Their Antidotes" has been prepared by Dr. H. C. Wood, Jr. The schedule is informative and given concisely. The lists of registered pharmacists, assistant pharmacists and of registered pharmacies by counties are useful records.

RECENT EDITIONS.

Pharmacopœia of the United States XI, U. S. Pharmacopœial Convention. Distributed by Mack Printing Co., Easton, Pa. Price, $5.00 Buckram; $6.00, Leather.

The National Formulary VI, AMERICAN PHARMACEUTICAL ASSOCIATION. Distributed by Mack Printing Co., Easton, Pa. Price, $5.00, Buckram; $6.00, Leather.

The Pharmaceutical Recipe Book, II, AMERICAN PHARMACEUTICAL ASSOCIATION. Distributed by Mack Printing Co. Price, $5.00, Cloth; $6.00, Leather.

The Extra Pharmacopœia, by MARTINDALE. Twenty-first Edition, in two volumes. Volume I. Published by direction of the Council of the Pharmaceutical Society of Great Britain, The Pharmaceutical Press, 23 Bloomsbury, W. C. I, England. Price, 27*s.* 6*d.*

The Art of Compounding, by WILBUR L. SCOVILLE and JUSTIN L. POWERS. Sixth Edition. Published by P. Blakiston's Son & Co., Inc., 1012 Walnut St., Philadelphia, Pa. Price, $4.75.

Incompatibilities in Prescriptions, by EDSEL A. RUDDIMAN and ADLEY B. NICHOLS. Sixth Edition. Published by John Wiley & Sons, Inc. Price, $2.75.

Remington's Practice of Pharmacy. Eighth Edition, by E. FULLERTON COOK and CHARLES H. LAWALL, with collaborators. Published by J. B. Lippincott Co., Philadelphia, Pa. Price, $10.00.

The Dispensatory of the United States of America. Twenty-second Edition. By HORATIO C. WOOD, CHARLES H. LAWALL, H. W. YOUNGKEN, ARTHUR OSOL, IVOR GRIFFITH and LOUIS GERSHENFELD. Published by J. B. Lippincott Co., Philadelphia, Pa. *The Centennial Edition.* Buckram, $15.00; Marginal Thumb Index, $15.75.

Textbook of Pharmacognosy, by H. W. YOUNGKEN. Fourth Edition. Published by P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia, Pa. Price, $7.00.

Formulary of the University Hospital, University of Michigan, by HARVEY A. K. WHITNEY. Published by Edwards Brothers, Inc., Ann Arbor, Mich.

Pharmacognosy, by E. N. GATHERCOAL and ELMER H. WIRTH. Published by Lea & Febiger, Philadelphia, Pa. Price, $7.50.

New Modern Drugs, supplements *Gutman's Modern Drug Encyclopedia.* Price, $1.00 a year. Address, 49 W. 45th St., New York City.

Cosmetic Dermatology, by HERMAN GOODMAN. First Edition. Published by McGraw-Hill Book Co., Inc., New York. Price, $6.50.

Text-Book of Inorganic Pharmaceutical Chemistry. By CHARLES H. ROGERS, University of Minnesota. Publishers, Lea & Febiger, Philadelphia, Pa. Price, $7.00.

Manual of Biological Assaying, by JAMES C. MUNCH. Published by J. B. Lippincott Co., Philadelphia, London and Montreal.

Guide Medical des Specialites Pharmaceutiques et des Etablissements Medicaux, by DR. JAILLARD. Published by A. Weissenthanner, 76 Avenue de la Republique, Paris XI, France.

A Text-Book of Organic Chemistry, by HUGH C. MULDOON. Publishers, P. Blakiston's Son and Company, Philadelphia, Pa. Price, $3.00.

Practical Pharmacognosy, by T. E. WALLIS. Third Edition. Published by J. & A. Churchill, Ltd., 104 Gloucester Place, Portman Square, London, W. 1. Price, 12*s.* 6*d.*

Qualitative Chemical Analysis, by THEODORE J. BRADLEY. Fifth Edition. Published by Lea & Febiger, Philadelphia, Pa. Price, $2.25.

Why Quit Our Own, by GEORGE N. PEEK with SAMUEL CROWTHER. Published by D. Van Nostrand Co., Inc., 250 Fourth Ave., New York City. Price, $.50.

The Clinical Use of Digitalis, by DREW LUTEN. Published by Charles C. Thomas, Baltimore, Md. Price, $3.50.

Tecnica Farmaceutica, by ALESSANDRO BERNARDI. Published by Nicola Zanichelli, Editore, Bologna.

Die Fermente und ihre Wirkungen, by PROF. CARL OPPENHEIMER. Published by Dr. W. Junk, Verlag, Den Haag. Price, $6.80, JOUR. A. PH. A. (May 1936), 483.

National Association Boards of Pharmacy Statistics, by H. C. CHRISTENSEN, 130 N. Wells St., Chicago, Ill. Price, $1.00.

Law of Drugs and Druggists, by WILLIAM R. ARTHUR. Published by West Publishing Co., St. Paul, Minn. Price, $3.00.

A Manual of Pharmacology, by WALTER E. DIXON. Revised by W. A. M. Smart. Eighth Edition. Published by William Wood & Co., Baltimore, Md. Price, $6.50.

Pharmazeutische Alterumskunde, by DR. JOSEF ANTON HAFLIGER. Published by Buchdruckerei zur Alten Universität, Zurich.

The New Zealand Official Year Book, 1936. Forty-fourth Issue. By THE CENSUS AND STATISTICS OFFICE OF THE DOMINION OF NEW ZEALAND. Published by Authority: G. H. Loney, Government Printer, Wellington, N. Z. Price, 7*s*. 6*d*.

Angewandte Pharmazie, by DR. ING W. KERN. Published by Die Deutsche Apothekerschaft, Abteilung für pharmazeutische Fortbildung. Price, $6.20.

The Law of Patents for Chemists, by JOSEPH ROSSMAN. Published by Williams & Wilkins Co., Baltimore, Md. Second Edition. Price, $4.50.

Popoff's Qualitative Analysis, by MURRAY J. RICE and WARREN P. CORTELYOU. Third Edition. Published by P. Blakiston's Son & Co., Inc., 1012 Walnut St., Philadelphia, Pa. Price, $4.00.

Disinfection and Sterilization, by ERNEST C. MCCULLOCH. Published by Lea & Febiger, Philadelphia, Pa. Price, $5.50.

Chinese Medicinal Plants, by BERNARD E. READ. Published by the Peking National History Bulletin. Third Edition. Price, China, $6.00. Other Countries, $7.50.

Leitfaden für die Pharmakognostischen Untersuchungen im Unterricht und in der Praxis. By PROF. DR. R. WASICKY, and others. Published by Franz Deuticke, Leipzig und Wien.

Parental Therapy, by WALTON FORREST DUTTON. Published by Charles C. Thomas, Springfield, Illinois; Baltimore, Md. Price, $7.50.

The Registers of Pharmaceutical Chemists and Chemists and Druggists, by THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN, 17 Bloomsbury Square, London, W. C. 1, England.

Twelve Hours of Hygiene, by F. L. MEREDITH. Published by P. Blakiston's Son & Co., Inc., Philadelphia, Pa. Price, $1.90.

Famous First Facts, by JOSEPH NATHAN KANE. Published by The H. W. Wilson Co., 950–972 University Ave., New York City. Price, $3.50, net.

Traffic in Opium and Other Dangerous Drugs, by U. S. TREASURY DEPARTMENT, Bureau of Narcotics, Washington, D. C. Published by the Government Printing Office, Washington, D. C. Price, $.15.

Beitrage zur Geschichte der Offizinellen Drogen, by KURT RUEGG. Published by Buchdruckerei Karl Schahl, Stetten and Basel, Switzerland.

Epidemic Amebic Dysentery. Published by U. S. Treasury Department, Public Health Service, Washington, D. C. For sale, Superintendent of Documents, Washington, D. C. Price, $.20.

Lilly Research Laboratories—Dedication, Indianapolis, Indiana.

Enzymologia, by DR. CARL OPPENHEIMER. Publishers, Dr. W. Junk, The Hague. Price, per volume, 15 Dutch florins.

Magische Gifte, by VIKTOR A. REKO. Publishers, Ferdinand Enke, Stuttgart W., Germany. Price, R. M. 6.40 plus 25%.

Prescription Writing and Formulary, by CHARLES SOLOMON. Publishers, J. B. Lippincott Company, Philadelphia, Pa. Price, $4.00.

Die Harze, by A. TSCHIRCH and ERICK STOCK. Publishers, Gebrüder Borntraeger, Berlin. Price, 58 marks, per volume as issued.

Handbuch Der Pharmakognosie, by A. TSCHIRCH. Published by Bernard Tauchnitz. This is issue No. 18.

Directory of Physicians and Pharmacists, Mexico. B. A. AVIGDOR, Laboratorio Quimico Central, City of Mexico. Price, $2.50.

The Medical Formulary and Prescription Manual. By MORRIS DAUER, Kings County Hospital, Brooklyn.

A Textbook of Anatomy, by JESSE FEIRING WILLIAMS, M.D. Publishers, W. B. Saunders Company, Philadelphia, Pa. Price, $2.75.

(To be continued.)

BRITISH PHARMACISTS AND CORONATION.

British pharmacists are preparing displays for the coronation of King George VI, as a part in this important event. The publications of Great Britain and Possessions are giving much study to the details, but as far as we have noted the decorations do not include subjects related to Pharmacy Week displays. The Coronation is an outstanding historical event, but it does not seem out of place to display the status of Pharmacy. As in connection with Pharmacy Week, prizes for displays are being provided and given by most of the industries and activities.

The Coronation Banquet of the Pharmaceutical Society will be held by permission of the corporation of the City of London, in Guildhall on April 6th; the Lord Mayor of London and the Sheriffs will be present on this occasion.

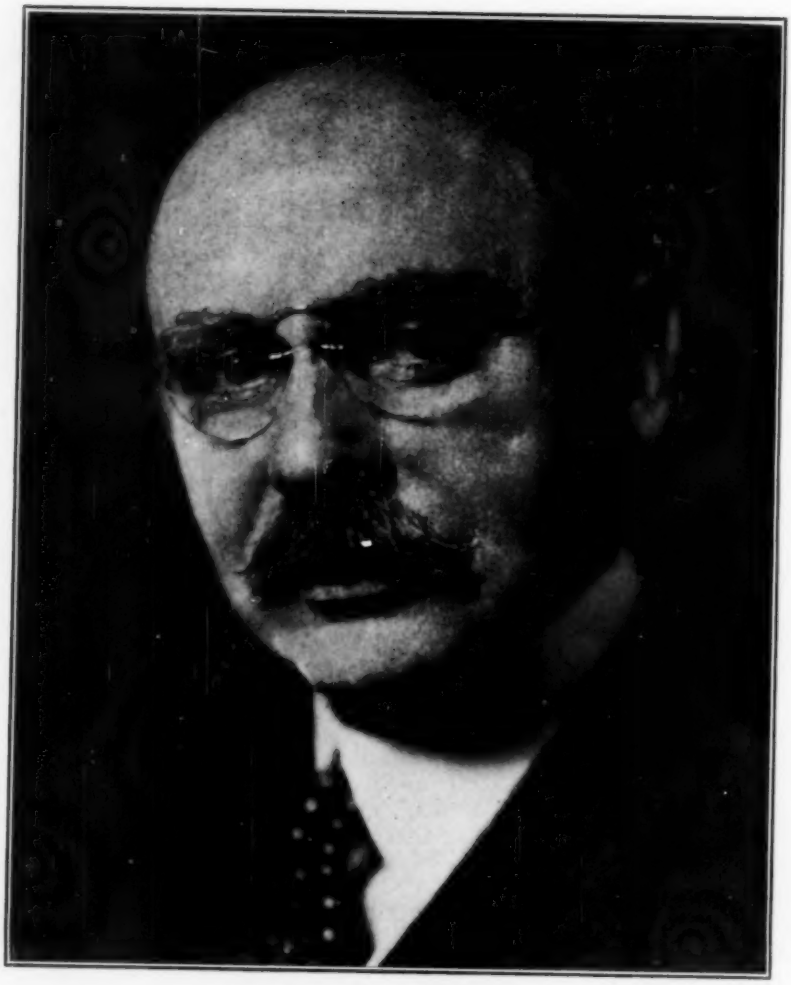
Great Britain has had a large part in the Pharmacy and there is a wonderful opportunity for pharmacists to bring out its history in a way that will attract public interest and impress that further recognition in various government services implies advancement and a greater value of the profession.

The reduced title page of the London Pharmacopœia of 1745 shown here, is from the Library of the AMERICAN PHARMACEUTICAL ASSOCIATION; it was published in the reign of George II. The English Apothecaries' Coat of Arms was described in the June JOURNAL for 1926. The motto of the Coat of Arms is "Opiferque per Orbum Dicor," translated, it reads, "And I am called a 'bringer of help' throughout the world."

SACRÆ MAJESTATI
SERENISSIMI CELSISSIMIQUE
PRINCIPIS
GEORGII
SECUNDI,
DEI GRATIA
MAGNÆ BRITANNIÆ,
FRANCIÆ, et HIBERNIÆ
REGIS,
Fidei Defensoris, &c.
Ducis *Brunswicensis* et *Lunenburgensis*,
S. R. I.
ARCHITHESAURARII et ELECTORIS,
COLLEGIUM MEDICORUM
LONDINENSE
HANC SUAM
PHARMACOPOEIAM
Humillimè Offert Consecratque.

The London Pharmacopœia of 1745.

The first definite allusion to an apothecary in England (According to "Woottons Chronicles of Pharmacy") occurs in 1345, when Edward III granted a pension of sixpence a day for life to Coursus de Gangeland, an apothecary of London, in recognition of his services in attending on the King during his illness in Scotland. An earlier mention of an apothecary is to John the Apothecary (Scottish Exchequer Rolls, 1329). Dr. J. Mason Good, who wrote a History of Medicine, so far as it relates to the "Profession of the Apothecary," in 1795 mentions on the authority of Regner that J. de Falcand de Luca publicly vended medicines in London in 1937, while Freind ("History of Medicine" 1725) states that Pierre de Montpelier was appointed Apothecary to Edward III in 1360. (The latter references are also from "Woottons Chronicles.")



J. LEON LASCOFF.